

GE Healthcare

# Centricity\* Imaging Analytics Real-time Dashboard Installation and Administration Service Manual

Analytics 1.1 Release  
2059103-001  
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GE Healthcare ATTN: General Counsel, 540 W. Northwest Highway, Barrington, IL 60010

# General Definitions of Symbols

The following table defines symbols used throughout this document and the product software:

Symbol	Definition
	This symbol indicates the <b>MANUFACTURER</b> of the product.
	This symbol indicates the <b>DATE OF MANUFACTURE</b> of the product.
	This symbol indicates that the operator should <b>CONSULT INSTRUCTIONS FOR USE</b> for further information.

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## About this Manual

This manual is for GE Service Representatives and customer System Administrators. It describes how to install, configure, and verify *Centricity\* Imaging Analytics Real-time Dashboard*.

### 1.1 Contacting GE Support

#### 1.1.1 Applications Support Using iCenter, Applications Answerline, and Customer Center

To request applications support, English-speaking customers may open a support request in GE Healthcare iCenter. Other customers should contact their GE Service Engineers or support personnel.

With GE Healthcare iCenter™ you can:

- Initiate requests for service and applications support from the web.
- Get rapid, online access to the Remote Operation Center (ROC) where expert service engineers review and respond to service requests quickly.
- View status of open service requests.
- View service history and reports about your systems, including uptime, remote fix and service call trends, and other service delivery metrics.

If you do not have access to iCenter, contact your Director of Service or Service Engineer to open an iCenter account. English-speaking customers can also use the following resources:

- GE Analytics Applications Answerline, 1 (800) 682–5327, option 8 (available for US and Canadian customers)

#### 1.1.2 Contact Information for GE Healthcare

The address and phone number for GE Healthcare are listed below.

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## 1.1.2.1 Corporate Headquarters



## Manufacturer

GE Healthcare  
 540 W Northwest Highway  
 Barrington, IL 60010 USA  
 Tel: +1 847 277-5000 or +1 800-437-1171 or +1 800-682-5327  
 Fax: +1 847 277-5240

## 1.2 Related Documentation

For information about using Analytics, refer to the *Centricity Imaging Analytics Real-time Dashboard User Manual*

## 1.3 Documentation Conventions

### 1.3.1 Text

The following table lists text conventions in this manual.

Table 1.1 Text Convention Descriptions

Description	Example
This typeface represents all buttons, entry fields, menus, and other user interface controls.	On the <b>File</b> menu, click <b>New</b> .
This typeface represents window and dialog box names.	This opens the <b>Preferences</b> dialog.
This typeface represents text you enter in a user interface control.	Enter <b>localhost</b> in the proper field.
This typeface represents user names and passwords and commands you type in response to a command prompt.	Default user name: <b>sysadmin</b>
This typeface represents file path names.	Open <b>lib\readme.txt</b> .
This typeface represents cross-references and other hypertext links.	See <b>Documentation Conventions (7)</b> .

## 1.3.2 Screen Captures

The example screens in this manual may not represent what you see on your monitor; use them only as guidelines.

## 1.4 Safety

Service manuals contain information for safe use of the device and will therefore follow regulatory requirements set forth for directions for use.

Refer to the Centricity Imaging Analytics Operator Manual for safety and certification information.

## 1.5 Terms, Acronyms, and Abbreviations

For a listing of commonly used terms, acronyms, and abbreviations, see [Glossary \(89\)](#).

## 1.6 Revision History

Table 1.2 Revision History

Revision	Date	Reason For Change	Author
Rev 1	August 1, 2011	Initial release.	Claudia Brandon
Rev 2	August 25, 2011	Added minor corrections.	Mark Stevens
Rev 3	September 6, 2011	Added upgrade chapter.	Mark Stevens
Rev 4	October 18, 2011	Corrected install step	Mark Stevens



## Pre-installation

The primary purpose of the pre-installation process is to work with the customer to ensure that the customer site is properly set up to support installation of the Centricity Imaging Analytics components they ordered. The pre-installation process involves several functional groups, including:

- The customer
- GE Healthcare Service Group
- GE Healthcare Project Managers (PMs)
- GE Healthcare Field Engineers (FEs)
- GE Healthcare Zone Support Engineers (ZSEs)
- GE System Integration Specialist (SIS)
- GE Healthcare Clinical Configuration Specialists (CCSs)

### 2.1 Minimum System Requirements

The following minimum system requirements must be met. If necessary, install or upgrade your software and/or hardware to meet these requirements.

#### 2.1.1 Minimum Server Hardware Requirements

Customers who purchase GE supplied Analytics hardware and software receive recommended hardware with the purchased software pre-installed.

Customer supplied server hardware should meet the specifications below.

Table 2.1 Recommended servers

Server	Part Number	Link to Technical Specifications Page
Dell R710 Server	Dell — 2670748	For power and environmental specifications, see <i>Tech Specs</i> on Dell's web page at: <a href="http://www.dell.com/us/business/p/poweredge-r710/pd?refid=server-poweredge-r710&amp;=baynote_bnrnk=1&amp;baynote_irrk=0&amp;~ck=baynoteSearch">http://www.dell.com/us/business/p/poweredge-r710/pd?refid=server-poweredge-r710&amp;=baynote_bnrnk=1&amp;baynote_irrk=0&amp;~ck=baynoteSearch</a>
HP DL380 Server	Hewlett Packard — BT291A	For power and environmental specifications, see <i>Specifications</i> on HP's web page at: <a href="http://h10010.www1.hp.com/wwpc/us/en/sm/WF06a/15351-15351-3328412-241644-241475-4091412.html">http://h10010.www1.hp.com/wwpc/us/en/sm/WF06a/15351-15351-3328412-241644-241475-4091412.html</a>

**Note** Customer supplied hardware must meet the following standards: IEC60825-1 (or equivalent), IEC 60950-1 (or equivalent), IEC CISPR-22 (or equivalent), IEC-CISPR-24 (or equivalent).

- Intel 64 bit capable of 2.00GHz, or more (Intel 64/EM64T, AMD64/x86-64).

**Note** Analytics is *not* compatible with the IA-64 architecture from Intel.

- 2 or more sockets
- Dual core or higher, per socket
- Minimum of 4 cores, per server
- 12GB RAM, or higher
- Storage attached to Ultra SCSI 320, SAS, Fibre channel, or equivalent SAN controller with 256MB or higher of write back battery backed cache.
- DVD drive
- 6 or more physical hard drives:  
RAID Configuration:
  - First 2 hard drives as RAID 1.
  - Last hard drive reserved as a hard spare.
  - Remaining hard drives as RAID 5.
- Ultra SCSI 320 or Fibre channel (or equivalent) disks of 10,000 RPM, or higher

## 2.1.2 Software Requirements for the Server

**Note** Analytics uses an x86 platform for its server hardware. It is not compatible with Intel's IA-64 architecture.

- If the customer purchases the server hardware and software from GE, the purchased software listed in Table 2.2 is pre-installed on the server.
- If the customer purchases the software from GE (but purchases the hardware from another source), the customer provide the OS installed on the server, then the GE Service Representative installs the other software listed in Table 2.2.

Table 2.2 Software requirements

Centricity Imaging Analytics Data Aggregation Engine	Installer included on the Analytics media.
Centricity Imaging Analytics Real-time Dashboard (optional)	License purchased separately. Installer included on the Analytics media.
Centricity Imaging Analytics Operational Metrics Engine (optional)	License purchased separately. Installer included on the Analytics media. This option is required by the Real-time Dashboard.
Microsoft SQL Server 10.50.1600.1 2008 R2 64-bit or higher	License purchased separately. If the license is purchased through GE, the software is included on the Analytics media. A license key for the included copy of SQL Server is built into the Analytics installer. No “client access license” is required.
Dundas Dashboard	License purchase is included with the Real-time Dashboard. Included on the Analytics media. License key is built into the Analytics installer. No “client access license” is required.
Microsoft Windows Server Standard 2008 R2 64-bit	License included with hardware purchased from GE. Customers who do not purchase the hardware from GE are responsible for installing the OS. <b>Note:</b> Analytics also requires installation of Internet Information Server (IIS) 7 (which is built into Windows 2008 R2 Server).  OS recovery media is shipped with the hardware.
Centricity Clinical Gateway 8.0.1 (optional)	License purchased separately. You may install CCG on the Analytics server or use an existing CCG 8.0.1 or greater system on another server. CCG ships on separate media from Analytics. This option is required by the Operational Metrics Engine and Real-time Dashboard.

**Note** If the customer does not purchase the hardware from GE, the hardware provider should be able to pre-configure it with the OS and the RAID.

### 2.1.3 Third Party Software Requirements for the Client

The Analytics client application is able to detect whether the recommended version of Microsoft Silverlight and Microsoft .NET is installed. If it is not, Analytics opens a message dialog listing the missing software and giving instructions for obtaining the software.

**Note** Certain IT departments lock down installs on client PCs. If so, Silverlight and .NET will not automatically install on clients. In this situation, the site IT department is responsible for installing the proper versions of Silverlight and .NET on all client PCs. The .NET installer is located at: **<Analytics Media>\InstallerSetup\PreInstallation\dotNetFx40\_Full\_x86\_x64.exe**. The Silverlight installer is located at: **<Analytics Media>\Silverlight Plugin\Silverlight.exe**.

Analytics runs on OS versions and web browser versions supported by Silverlight 4.0.

- Microsoft Silverlight 4.0 (version 4.0.50826.0) plug in, or later
- Microsoft .NET 4.0 (version 4.0.30319.1) run time, or later

- Refer to Microsoft's web site for information about system requirements for Microsoft Silverlight.

## 2.2 SQL Server Data Worksheet

If the site is using an existing SQL Server database, use a printout of the following worksheet to record data about the database. Keep the filled out form as you perform the installation.

**Important** If a database already exists on the SQL Server, a trained and knowledgeable customer representative should add the Analytics database to the SQL Server.

Component	Required Data	Entry
Network Information	IP Address	
	Hostname	
		<b>Note:</b> Valid characters include A-Z, 0-9, the underscore and hyphen. Maximum length is 8 characters.
	Subnet Mask	
	Gateway	
	ILO (HP) or DRAC (Dell) IP Address	
Password	Default User Password	There are no requirements as to the length, special characters, etc., for the password.
	Default Administrator Password	There are no requirements as to the length, special characters, etc., for the password.
Database backup schedule		Full Backup (day of week and time).

## 2.3 Submit the ROC VPN Form

Be sure that the customer and the ROC are aware that the following ports must be open on the site firewall and the ROC firewall:

- SNMP – 161
- SQL Server – 1433
- SSH – 22
- Web Server – 80, 443
- Windows RDP – TCP 3389

**Note** The FE should add a note on the VPN form that details which ports need to be open.

## 2.4 Install or Upgrade CCG

Analytics requires CCG version 8.0.1 or higher. The site can either use a pre-existing CCG installation or can install CCG on the Analytics server.

- To upgrade a pre-existing CCG system to 8.0.1 or higher, check for CCG compatibility with the existing PACS system using the PACS compatibility matrix. Refer to the appropriate version of the *CCG for PACS Installation and Upgrade Manual* for CCG upgrade instructions.
- To install a new CCG system, see [Baseline Installation of the CCG Software \(33\)](#). Wait until after you have installed Analytics before installing a new CCG system. The new CCG system then uses the same SQL Server as Analytics.

## 2.5 VPN Concentrator

- The VPN concentrator is supplied by the customer.
- The Project Manager supplies the IP addresses to the Field Engineer.
- The Field Engineer submits the ROC VPN form, which includes a request to open the required nonstandard ports.
- The ROC team works with the customer to configure the VPN and adds it to the GE ROC internal VPN.

## 2.6 Workflow Understanding and HL7 Site Survey

The HL7 integration team works with the customer to complete this document.

## 2.7 Authentication

If the site uses *Windows Active Directory* authentication (and would like to continue using their domain login to access Analytics), add the Analytics server to the domain. You can add a new Active Directory domain and add Analytics to that new domain. Any valid user account in the domain to which the Analytics server is assigned can be used to log in to the Analytics application. See your Active Directory manual or online help for information about adding a domain and user.

**Note** When creating a new user in the Active Directory Users for Authentication, make sure that the **User must change password at next logon** option is not selected.

If the site does not wish to use Active Directory domain logins, create Windows user accounts on the Analytics server using operating system provided tools. Any valid Windows user account on the Analytics server can be used to log in to the Analytics application.

## 2.8 Microsoft Active Directory Domain Integration

Analytics may be placed in a Microsoft Active Directory (AD) domain, but the following topics should be carefully considered and prepared together with the customer beforehand.

### 2.8.1 User Management

A key benefit of joining an AD domain is that it can give domain *users* the access to Analytics. It can also give domain *groups* the access to the Analytics. Another key benefit is the easier setup of authentication for accessing network shares for network backup purposes.

### 2.8.2 Systems Management

By default, joining an AD domain will make Domain Administrators members of the local group "Administrators" and therefore give them full control over the Analytics server. For example, Administrators:

- can access and change stored data
- can access and change system and application configuration
- can alter access control lists
- are entitled for remote access by default

The activities of Windows users within the Analytics application are logged using a Windows event logging mechanism, but no explicit work has been done on the server to shield IT administrators from accessing patient health information. This is a security, data-integrity, and patient-data-privacy concern of which the customer should be fully aware.

**It is the customer's responsibility to carefully manage this concern with proper employee policies and controls before placing the system in an AD domain!**

### 2.8.3 Configuration Management

Joining an AD domain makes the Analytics server allow for its configuration via Group Policy (GPO). However, GPOs have been a major cause of problems as a direct result of placing systems in an AD domain.

Once downloaded to a local system, GPO can be hard to detect as the cause of problems and hard to reset locally. Great care should therefore be taken to exclude the Analytics server from any general-purpose GPO rollout.

Examples of commonly used GPOs that cause issues are *password age rules* and *password complexity rules*. Analytics does not provide the ability to change domain passwords. This may lead to user inconvenience at those sites where the end users do not typically log in to the domain from workstations where they run this application or from outside the facility, such as from home.

Additionally, firewall rules typically meant for workstations inhibit access on Port 80 and 443 which, if applied to this server, will stop it from serving up web pages.

**Customers are therefore strongly advised to ensure the GPOs applied to the Analytics server do not inhibit its ability to perform as a web server!**

## 2.8.4 Central Software Deployment

Joining an AD domain opens up the possibility for central software deployment. Customers can install patches and software that are compatible with SQL Server 2008 R2 and IIS 7. Please recognize that patches and software that require reboot should not be installed automatically, and scheduled with GE support prior to patch installation. Please also recognize that deploying unnecessary software and patches can potentially affect the performance of the system.

## 2.9 Modality Interfacing to CCG

**DMWL MPPS Service** should be selected during CCG installation in order to interface with modalities. (See [Start with InstallAnywhere Installation \(33\)](#)).

See the MPPS Configuration chapter in the *Centricity Clinical Gateway Service Manual* for information about configuring CCG for MPPS.

## 2.10 HL7 and ENM Mapping

GE Support Representatives should have a spreadsheet specifying HL7 and ENM mapping information.

# Installation

If the customer has purchased both the software and the server hardware from GE, the Analytics and CCG software will already be installed. Skip to [Site Configuration \(59\)](#). This chapter shows how to install Analytics when the customer has purchased a software-only system.

**Note** Before installing Analytics, you should refer to the customer purchase order to verify the options that were purchased.

**Note** For all of the installation procedures, you should be logged in to an account with system administrator privileges.

- If, for some reason, you are starting with a new server with nothing installed, you will need to configure the RAID and install the operating system. Refer to the instructions for configuring the RAID distributed with the server. In most cases RAID configuration and OS installation will be done by the hardware vendor or by GE Healthcare Manufacturing.

RAID Configuration:

- First 2 hard drives as RAID 1.
- Last hard drive reserved as a hard spare.
- Remaining hard drives as RAID 5.

These instructions include OS installation instructions for your convenience, in case you have to re-baseline the system ([Install the Server OS \(17\)](#)).

- Once you have a system with a configured RAID and Windows Server 2008 R2 installed, you need to install .NET 4.0, SQL Server 2008, and the Analytics software.
  1. [Install IIS Web Services \(18\)](#)
  2. [Make the Server IP Address Static \(18\)](#)
  3. [Add .NET Framework Features \(20\)](#)
  4. [Install .NET Framework 4.0 \(21\)](#)
  5. [Enable Static Content on the Web Server \(21\)](#)
  6. [Configure Automatic Updating \(22\)](#)
  7. [Check to Make Sure the Software Installed at this Point Is Correct \(22\)](#)
  8. [Install Analytics \(22\)](#)
  9. [Set the Maximum SQL Server Memory Usage \(26\)](#)
  10. [Change the Default Passwords \(27\)](#)
  11. [Post-Installation Verification Checklist \(31\)](#)



## 3.1 Install the Server OS

Prerequisite:

- The RAID must be properly configured. (See [Minimum Server Hardware Requirements \(9\)](#)).

If you are installing the OS (rather than installing Analytics on a machine with a pre-installed OS), you may have also configured the RAID on the system. After you configure the RAID, the system reboots. During the system reboot, you will see an installation window for Windows Server 2008.

1. Click **Install Now**.
2. On the **Select the operating system you want to install** window, select **Windows Server 2008 R2 Standard (Full Installation)**. Click **Next**.
3. On the **license terms** window, select **I accept the license terms**. Click **Next**.
4. On the **Which type of installation do you want?** window, select **Custom (Advanced)**. Click **Next**.
5. Click **Next**.
6. Choose the boot disk. If a **Where do you want to install Windows?** window opens, select the RAID 1 for OS installation and click **Next**. The RAID 1 becomes the C: drive.

*Result:* The installation begins. Upon completion, the system automatically restarts.

7. Before logging in for the first time, specify a new password and confirm.

*Result:* A popup tells you that the password has been successfully changed.

8. Minimize the **Initial Configuration Tasks** window.
9. After logging in, go to **Start > All Programs > Administrative Tools > Computer Management > Storage > Disk Management**.
10. On the **Initialize Disk** window, right-click **CD-ROM 0**.

*Result:* Your DVD exists here.

11. Select **Change Drive Letter and Paths...**, and change the drive from **D:** to the **E:** drive. Click **OK**.

*Result:* You may get the following alert: **Some programs that rely on drive letters might not run correctly. Do you want to continue?** This is OK. Click **Yes**.

12. If you did not initialize the disk in step 6, do so now.
  - a. Right-click on the disk and choose **Initialize Disk**.
  - b. If given the choice, choose the **MBR (Master Boot Record)** partition style and click **OK**.

13. Right-click **Disk 1** and select **New Simple Volume**.

*Result:* The **Create New Volume** wizard opens.

14. Click **Next**, maintaining the default settings, until the **Assign Drive Letter or Path** window displays. Select **D:** and click **Next**.
15. Click **Next** until the wizard completes and displays a summary of your choices. Click **Finish**.
16. Maximize the **Initial Configuration Tasks** window. Click **Enable Remote Desktop**.
17. On the **Remote** tab, select **Allow connections from computers running any version of Remote Desktop (less secure)**. Click **Apply**.

*Result:* A popup prompts you that the remote desktop firewall exception will be enabled.

18. Click **OK**.
19. To turn off the firewall, go to **Start > Administrative Tools > Server Manager > Configuration > Windows Firewall with Advanced Security**.
20. On the **Windows Firewall with Advanced Security** window, click **Windows Firewall Properties**. On the **Domain Profile**, **Private Profile**, and **Public Profile** tabs, locate **Firewall State:** and select **Off**. Click **OK**. and close **Server Manager**.

*Result:* The server operating system is now installed.

*Next:* [Install IIS Web Services \(18\)](#)

## 3.2 Install IIS Web Services

Once the OS is installed you will need to install the web server.

1. Go to **Start > Administrative Tools > Server Manager**. Click **Roles**, then click **Add Roles**.
2. On the **Before You Begin** window, click **Next**.
3. On the **Select Server Roles** window, select **Web Server (IIS)**. Click **Next**.
4. On the **Web Server (IIS)** window, click **Next**.
5. On the **Select Role Services** window in section **Select the role services to install for Web Server (IIS):**, select *all* of the Role Services. Click **Next**.
6. On the **Confirm Installation Selections** window, click **Install**.

*Result:* The installation begins and an **Installation Progress** message displays.

7. When the **Installation Succeeded** message displays, close the window.

*Result:* The web server is now installed.

*Next:* [Make the Server IP Address Static \(18\)](#)

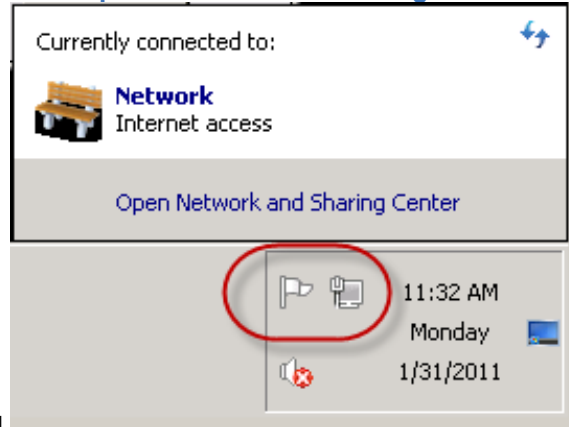
## 3.3 Make the Server IP Address Static

The IP address of the Analytics server must be static.

To make the IP address static:

1. If you are not already logged in to the server as an administrator, log in.

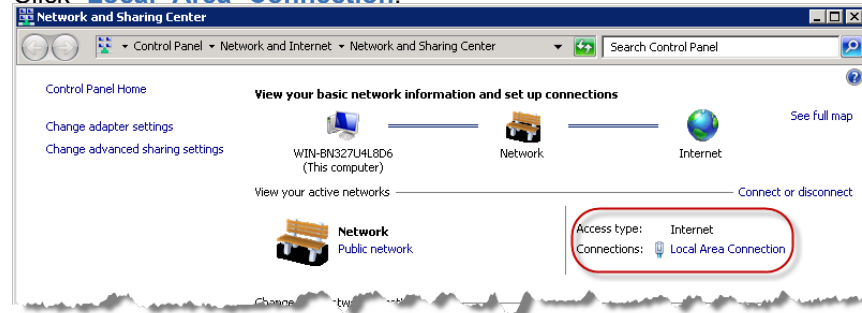
2. Click the Network icon in the lower right corner of the Windows screen, then select **Open Network and Sharing Center** from the resulting



menu.

*Result:* This opens the **Network and Sharing Center** window.

3. Click **Local Area Connection**.

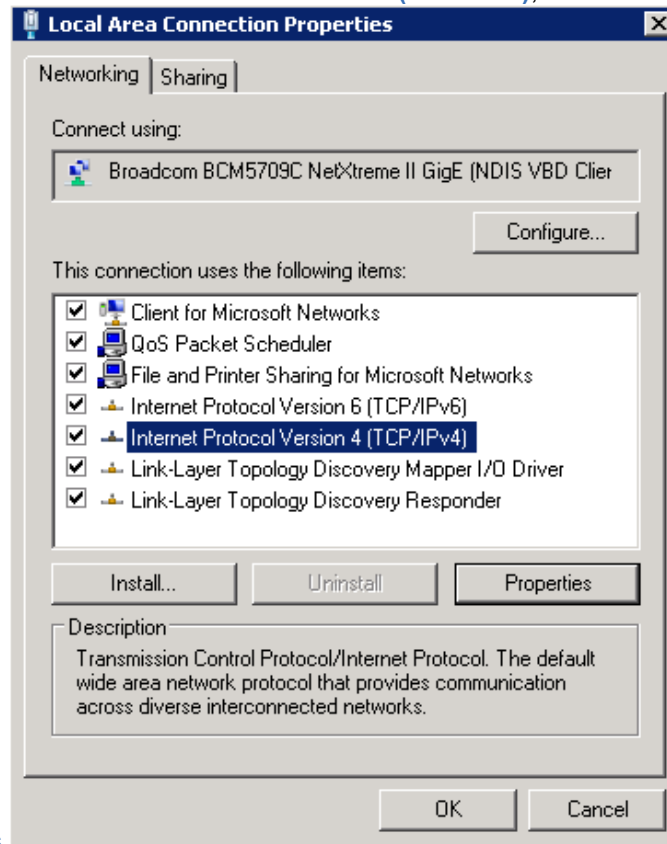


*Result:* This opens the **Local Area Connection Status** dialog.

4. Click Properties.

*Result:* This opens the **Local Area Connection Properties** dialog.

5. Select **Internet Protocol Version 4 (TCP/IPv4)**, then click **Proper-**



ties.

*Result:* This opens the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog.

6. Choose **Use the following IP address**, then enter the **IP address**, **Subnet mask**, and **Default gateway**.
7. Enter the DNS server IP address (this should enable the DNS option).
8. Click **OK**, then click **OK** on the **Local Area Connection Properties** dialog, then click **Close** on the **Local Area Connection Status** dialog.

*Next:*      *Add .NET Framework Features (20)*

## 3.4 Add .NET Framework Features

1. Go to **Start > Administrative Tools > Server Manager**. Click **Features** and click **Add Features**.
2. Select **.Net framework 3.5 Features**. On the **Add Features Wizard** window, click **Add Required Features**. Click **Next**.
3. On the **Confirm Installation Selections** window, click **Install**.

*Result:* Installation begins and an **Installation Progress** message displays.

4. When the **Installation Succeeded** message displays on the **Installation Results** window, click **Close**.

*Result:*      .NET Framework Features are now installed.

*Next:*      *Install .NET Framework 4.0 (21)*

## 3.5 Install .NET Framework 4.0

1. Right-click **<Analytics Media>\InstallerSetup\PreInstallation\dotNetFx40\_Full\_x86\_x-64.exe** and select **Run As Admin** from the context menu.
2. On the **Microsoft .NET Framework 4 Setup** window, select the **I have read and accept the license terms** check box. Click **Install**.

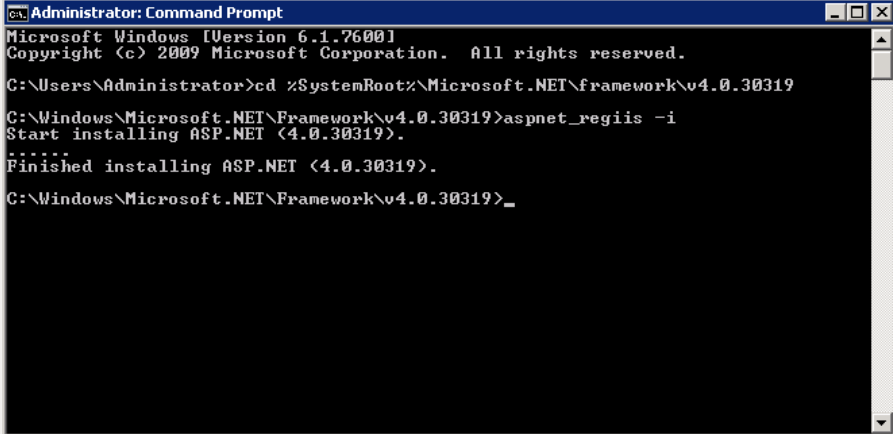
*Result:* The installation progress displays.

3. If the setup process succeeded, the **Microsoft .NET Framework 4 Setup** dialog displays the message: **Installation Is Complete**. Click **Finish**.
4. Reboot the server when asked.
5. Register the new version of ASP.NET IIS.

Open a Windows **Command Prompt** and type the following commands:

- a. `cd %SystemRoot%\Microsoft.NET\Framework\v4.0.30319`
- b. `aspnet_regiis -i`

*Result:* This installs ASP.NET. The installation takes a few minutes.



```

Administrator: Command Prompt
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>cd %SystemRoot%\Microsoft.NET\Framework\v4.0.30319
C:\Windows\Microsoft.NET\Framework\v4.0.30319>aspnet_regiis -i
Start installing ASP.NET (4.0.30319).
Finished installing ASP.NET (4.0.30319).
C:\Windows\Microsoft.NET\Framework\v4.0.30319>_
  
```

*Result:* .NET Framework 4.0 is now installed.

*Next:* [Enable Static Content on the Web Server \(21\)](#)

## 3.6 Enable Static Content on the Web Server

If static content is not enabled on the web server, do the following:

1. In Windows Server, go to **Start > Administrative Tools > Server Manager > Roles > Web Server (IIS)**.
2. On the **Web Server (IIS)** window, scroll down to **Role Services**:
3. Make sure the following features are shown as *Installed* in the **Status** column: **Common HTTP Features** and **StaticContent**. If these features are not installed, click **Add Role Services** on the right side of the **Web Server (IIS)** window and select the **Common HTTP Features** and **Static Content** check boxes. Then, click **Next**.

*Next:* [Configure Automatic Updating \(22\)](#)

## 3.7 Configure Automatic Updating

If the Analytics server has access to the internet, and the site policies allow automatic updating, you may turn on Windows automatic updating. Otherwise skip to [Check to Make Sure the Software Installed at this Point Is Correct \(22\)](#)

1. Go to **Start > Control Panel > System and Security**.
2. Under **Windows Update**, click **Turn automatic updating on or off**. Select your update preferences. Click **OK**.
3. On the **Windows Update** window, click **Check for updates**.
4. Click **Windows Update** and click **Install updates**.

*Result:* You must restart the computer after the updates have been installed.

*Next:* [Check to Make Sure the Software Installed at this Point Is Correct \(22\)](#)

## 3.8 Check to Make Sure the Software Installed at this Point Is Correct

1. Check to see if the web server is installed.
  - a. Select **Start > Administrative Tools > Server Manager**
  - b. Click **Roles**. If **Web Server (IIS)** is listed under **Roles Summary**, then it is installed.
2. Select **Control Panel** from the Windows **Start** menu.
3. Under **Programs**, click **Uninstall a program**.
4. Check to see if Microsoft .NET Framework 4 Extended 4.0.30319 is installed.

If it is not listed, [Add .NET Framework Features \(20\)](#) and [Install .NET Framework 4.0 \(21\)](#).

*Next:* [Install Analytics \(22\)](#).

## 3.9 Install Analytics

Prerequisite:

This procedure is for the *initial installation* of the Real-time Dashboard.

- Verify whether or not the customer has purchased the Real-time Dashboard option.
1. Right-click **<Analytics Media>\InstallerSetup\Setup.exe** and select **Run as Administrator** from the context menu.
  2. Check to see whether the site has purchased the *Real-time Dashboard* option. This should be indicated with the GON (General Order Number).
    - a. The following options are always required, and should be checked by default: **User Setup**, **SQL Server**, and **Data Aggregation Engine**.
    - b. If the site has purchased the *Real-time Dashboard* option, select the **Dashboard** checkbox.
  3. Click **Install**.

**Result:** Once you click Install, a **Command** window opens. **Do not close this command window.** (You may minimize or move it, just do not close it.) It may take 20 to 30 minutes for the SQL Server to install. When the SQL Server install completes, the **Centricity Imaging Analytics Setup Wizard** opens.

4. When the **Centricity Imaging Analytics Setup Wizard** window opens, click **Next**.
5. On the **Custom Setup** installer page, allow the default setup location and click **Next**. (The pre-selected location is *C:\Program Files (x86)\GE Healthcare\Centricity Analytics*.)
6. On the **Select SQL server instance** installer page, choose a SQL server and specify the **User Name** and **Password**, then click **Next**.

If you choose localhost, the installer will install the proper version of SQL Server on the Analytics server. If you want to use a pre-existing SQL Server, specify the IP address of that server. Analytics requires Microsoft SQL Server 10.50.1600.1 2008 R2 or higher.

If you specify localhost, the default **User Name** should be **sa** and the default **Password** should be **V0yag3r**.

**Important** The default passwords are public information. The site must change all default passwords before taking the system live. (To change the password, log directly into the SQL Server database and change the SQL Server password for that user.)

If you specify another server, specify the **User Name** and **Password** for a pre-existing administrator account.

7. On the **IIS Configuration** page, choose the web site.

Typically you should accept the default (**Install under Default Web Site**) by clicking **Next**.

If, for some reason, you need to create a new web site:

- a. Choose **Create a new Web Site**.
  - b. Enter the appropriate **Web Site Name:** and **Web Site Port:**.
  - c. Click **Next**.
8. Click **Install**.

**Result:** The next Wizard page displays the progress of the installation.

9. On the **Completed the Centricity Real-time Analytics Dashboard Setup Wizard** page, click **Finish**.

**Result:** The *Centricity Imaging Analytics Data Aggregation Engine* is now installed. If you chose not to install the Dashboard, the installation is finished and you should skip to the next topic (*Set the Maximum SQL Server Memory Usage (26)*).

If you opted to install the Dashboard, a new command window opens. **Do not close this window.** (You may minimize or move it, just do not close it.) The On the **Dashboard** window, the installation progress displays. This should take about 5–10 minutes.

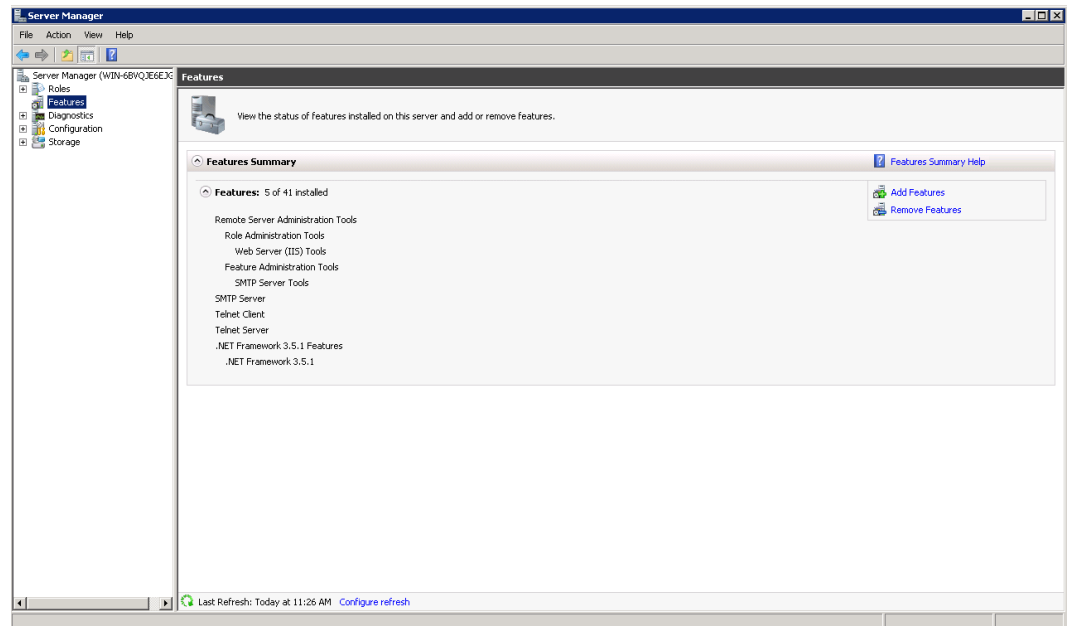
10. Click **OK**.

**Next:** *Set the Maximum SQL Server Memory Usage (26)*

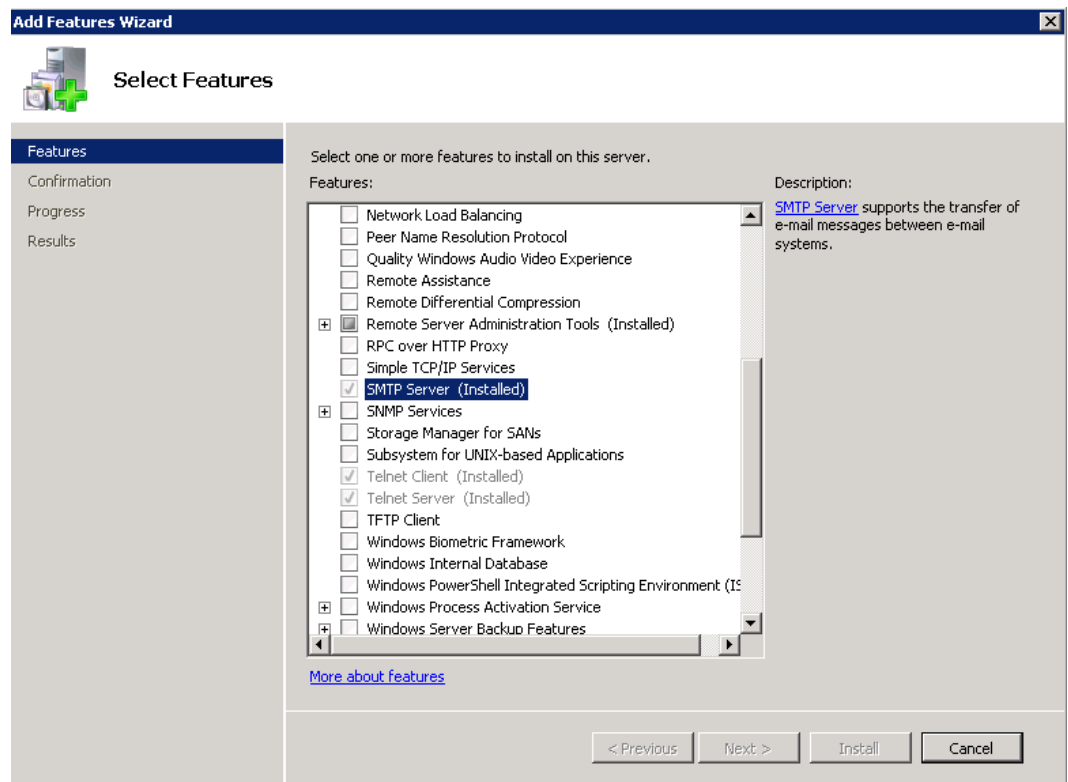
## 3.10 Install SMTP Services for Notifications

To install the SMTP feature, do the following:

1. Go to **Start > Administrative Tools > Server Manager**. Click **Features**. On the **Server Manager** window, click **Add Features**.

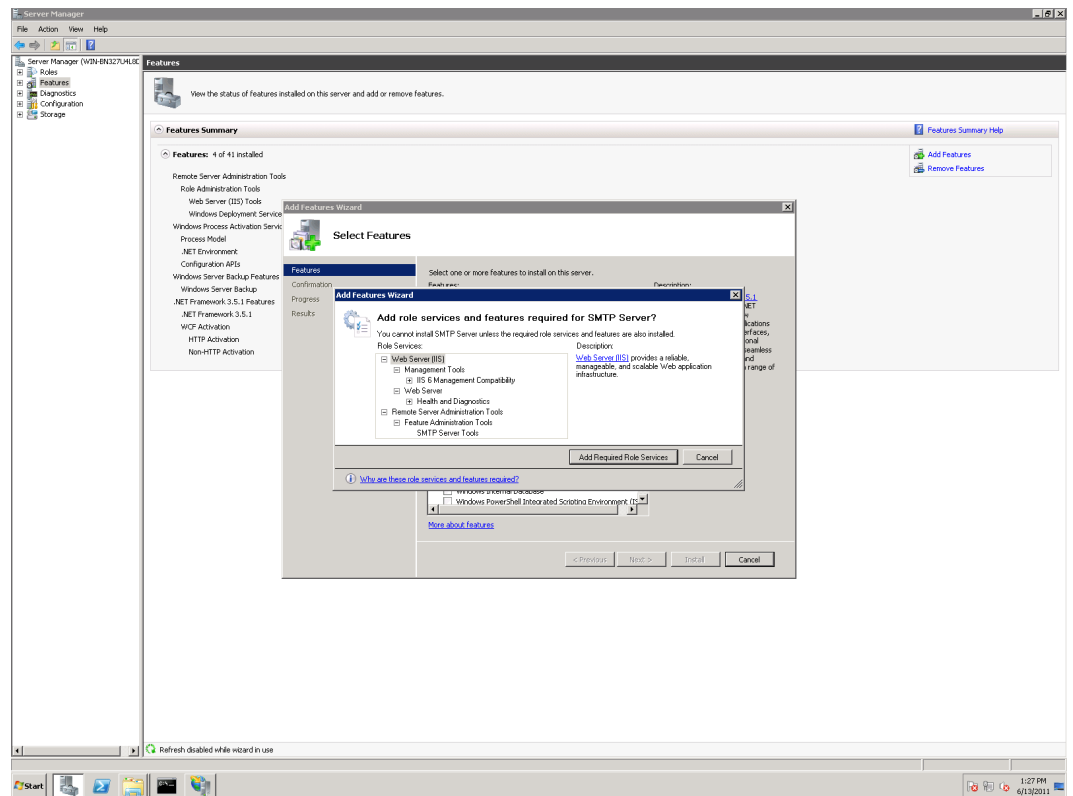


2. On the **Select Features** window, select **SMTP Server**.

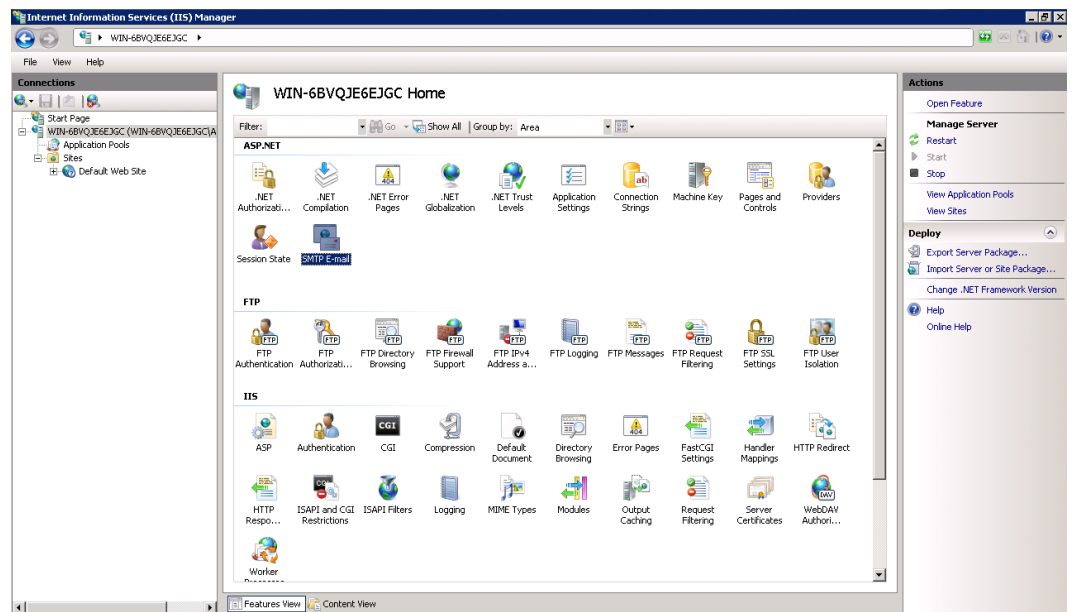


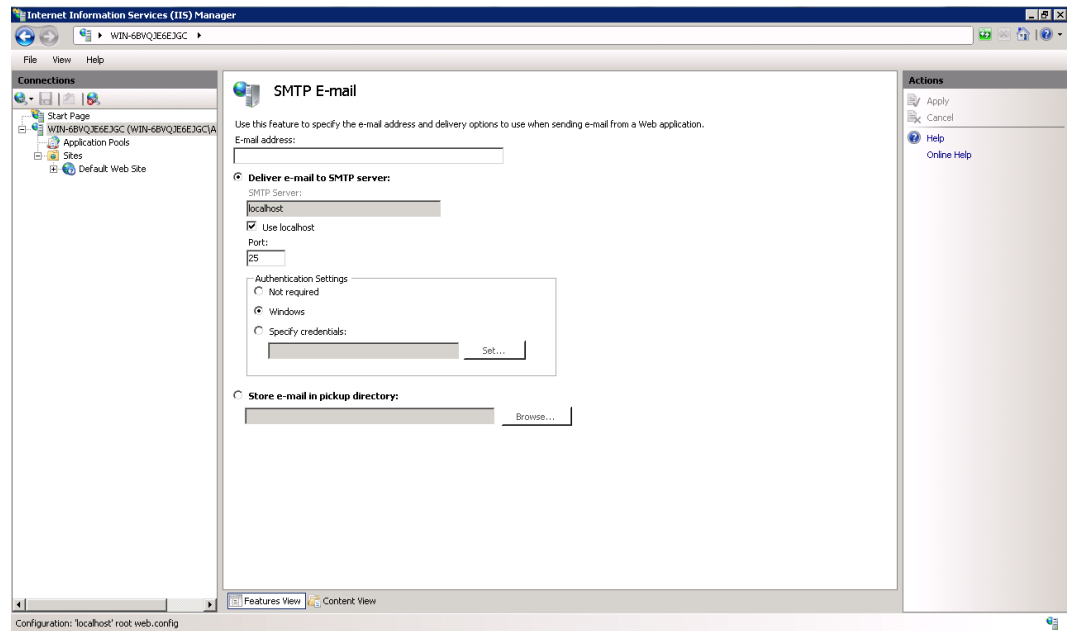
3. On the **Add Features Wizard** window, click **Add Required Features** and click **Next**.
4. On the **Confirm Installation Selections** window, click **Install**. Then, click **Close**



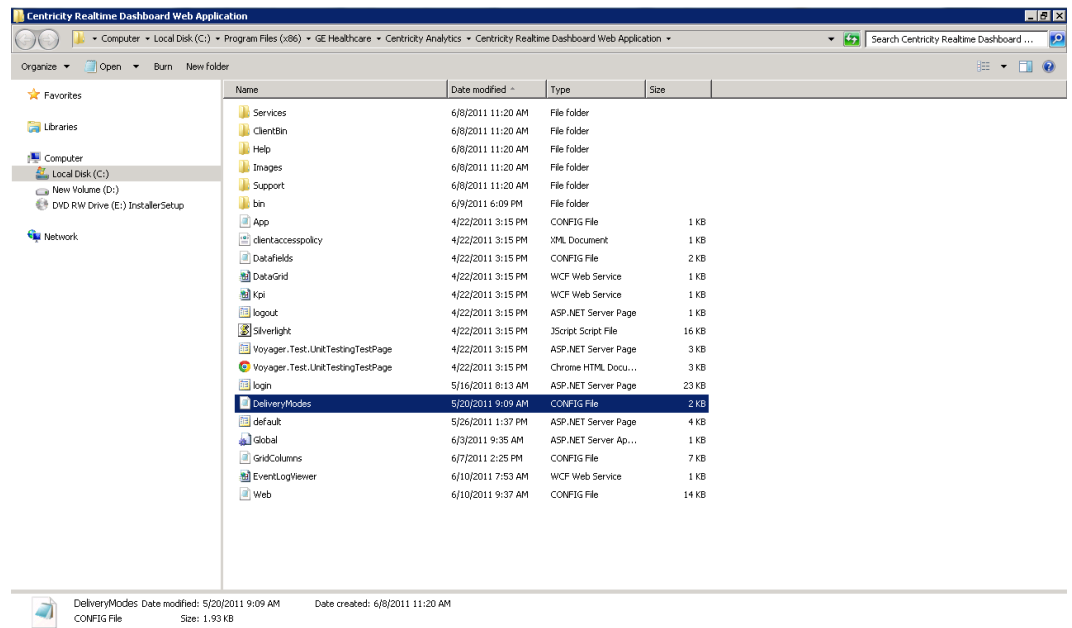


5. On the **Internet Information Server (IIS) Manager** window, select the **SMTP E-mail** plugin and configure the e-mail address and delivery options.





6. Locate the *DeliveryModes.config* in the web root folder and configure according to your customer site. The file is located at *C:/Program Files(x86)/GE Healthcare/Centricity Analytics/Centricity Realtime Dashboard Web Application*.

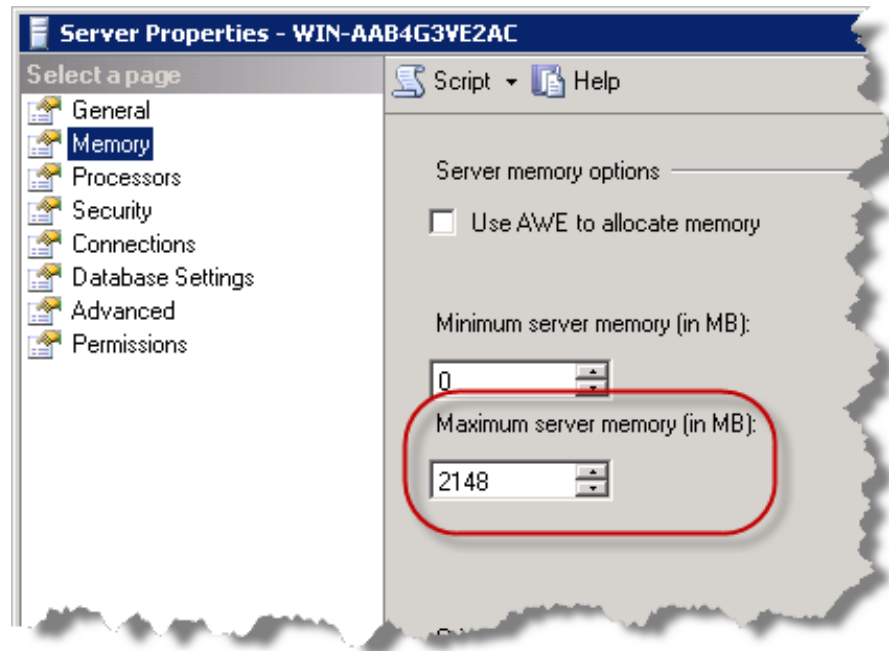


7. On the **Installation Results** window, click **Close**.

## 3.11 Set the Maximum SQL Server Memory Usage

If 25% of the total memory on the server is greater than 2 GB (2048 MB), set the maximum amount of memory that SQL Server uses to 75% of the total memory available. If 25% of the total memory is less than 2048 MB, set the maximum memory to the total memory minus 2048 MB.

1. From an administrator account on the computer hosting SQL Server, open *SQL Server Management Studio* and log into the server as **sa**.  
To open Management Studio, select **Start > All Programs > Microsoft SQL Server 2008 R2 > SQL Server Management Studio** from the Windows toolbar.
2. Right-click on the server in the **Object Explorer** (the server is the top item).
3. Select **Properties** from the context menu.
4. Select the **Memory** page in the **Server Properties** dialog.
5. Calculate the maximum memory to specify in MB (either 75% of the total or the total memory minus 2 GB) and specify that amount under **Maximum server memory**.



6. Click **OK** and exit the SQL Server Management Studio.

*Next:*      [Change the Default Passwords \(27\)](#)

## 3.12 Change the Default Passwords

Since the default passwords are public information, you must change the passwords before taking the system live. You should change the passwords after installing Analytics, but before installing CCG. The CCG installation process asks you for the user name and password for the **ccg** account. Specify the new password you set in the SQL Server database.

There are three passwords you must change:

**Note** Password management is the responsibility of the customer.

User Name	Default Password	Description
<b>sa</b>	<b>V0yag3r</b>	The SQL Server system administrator.
<b>analyst</b>	<b>G3car3s</b>	The account which Analytics and Dundas use to connect to the database.
<b>ccg</b>	<b>G3car3s</b>	The account which CCG uses to connect to the Analytics database.

1. Change the passwords on SQL Server.
  - a. From the machine hosting SQL Server, log in to the Analytics database as **sa**.
  - b. Right-click on **localhost > Security > Logins > sa**.
  - c. From the context menu, select **Properties**.
  - d. Change the password on the resulting **Properties** dialog.
  - e. Repeat steps **b** through **d** for the **analyst** and **ccg** users.
2. Change the **analyst** password in *Web.config*.
  - a. Open *Web.config* with a text editor on the Analytics server.  
The path should be:  
*C:\Program Files (x86)\GE Healthcare\Centricity Analytics\Centricity Realtime Dashboard Web Application\Web.config*
  - b. Search for **analyst**.  
The user id should be in the phrase: User ID=analyst; followed by the phrase: Password=G3car3s; (where **G3car3s** is the current password for **analyst**.)
  - c. Change the password, then search for **analyst** again.
  - d. Change the password for that second instance of **analyst**.
  - e. Search for **analyst** again.  
*Result:* You should not find any more instances. If you do, change the password for that instance too and continue searching.
  - f. Once you have changed the password for all instances of **analyst**, save your changes and close the file.

*Example:*

*Web.config*

```
<connectionStrings>
  <!-- WIN-TC9GLUG7P8D.clients.am.health.ge.com -->
  <!-- ILOUSE903K15L.clients.am.health.ge.com -->
  <add name="dashboardURI" connectionString=
    "http://3.28.73.65/DundasDashboardv2.5.4/" />
  <add name="voyager" connectionString=
    "Initial Catalog=voyager;Data Source=localhost;
    User ID=analyst;Password=G3car3s;Persist Security Info=True;"
    providerName="System.Data.SqlClient" />
  <add name="VoyagerEntities" connectionString=
    "metadata=res://*/Data.VoyagerEntityDataModel.csdl|
    res://*/Data.VoyagerEntityDataModel.ssdl|
    res://*/Data.VoyagerEntityDataModel.msl;
    provider=System.Data.SqlClient;provider connection string=
    &quot;Data Source=localhost;Initial Catalog=voyager;
    User ID=analyst;Password=G3car3s;MultipleActiveResultSets=True&quot;;
    providerName="System.Data.EntityClient" />
</connectionStrings>
```

3. Change the **analyst** password in *Dundas.Dashboard.config*.
  - a. Open *Dundas.Dashboard.config*.  
The path should be:  
*C:\Program Files\Dundas Data Visualization Inc\Dundas Dashboard\2.5.4\www\Dundas.Dashboard.config*
  - b. Repeat steps 2 b through 2 f to change the password for **analyst** in the Dundas configuration file.
4. Log in to Dundas as **admin** and change the **analyst** password in the Dundas interface (the default **admin** password is **V0yag3r**).

Dundas should be located at:

*http://<Analytics server IP address>/DundasDashboardv2.5.4/.*

- a. Log in as
- b. In the Design Explorer column, navigate to **Data Connectors > Voyager > Voyager Data Connector**.
- c. Right-click on **Voyager Data Connector** and select **Edit** from the context menu.  
*Result:* This opens the **Editing Data Connector** screen.
- d. Under **Use SQL Server security** enter the **User name** (**analyst**) and the new **Password**.

- e. Click **Test Connection**.
- f. If the test works, click **Save**.

*Next:* Go through the *Post-Installation Verification Checklist (31)* to make sure everything was correctly installed.

## 3.13 Upgrade Analytics

### Prerequisites:

- Before the upgrade, disconnect CCG and the Real-time Dashboard interface. Messages will queue on the CCG side and will be processed when the Real-time Dashboard interface is reconnected.
  - Follow this procedure *only* if version 1.0 is already installed. To verify, go to the Real-time Dashboard **About** dialog box.  
Verify whether or not the customer has purchased the Real-time Dashboard option.
1. Right-click **<Analytics Media>\InstallerSetup\Setup.exe** and select **Run as Administrator** from the context menu.
  2. Check to see whether the site has purchased the *Real-time Dashboard* option. This should be indicated with the GON (General Order Number).
    - a. The following options are always required, and should be checked by default: **User Setup (installed)**, **SQL Server (installed)**, and **Data Aggregation Engine**.
    - b. If the site has purchased the *Real-time Dashboard* option, select the **Dashboard** checkbox.
  3. A **The previous version of Centricity Analytics is already installed. Click OK to Upgrade!** popup displays. Click **OK**, then click **Install**.
  4. When the **Centricity Imaging Analytics Setup Wizard** window opens, click **Next**.
  5. On the **Custom Setup** installer page, allow the default setup location and click **Next**.
  6. On the **Select SQL server instance** installer page, choose a SQL server and specify the **User Name** and **Password**, then click **Next**.

If you choose localhost, the installer will install the proper version of SQL Server on the Analytics server. If you want to use a pre-existing SQL Server, specify the IP address of that server. Analytics requires Microsoft SQL Server 10.50.1600.1 2008 R2 or higher.

If you specify localhost, enter the default **User Name** (**sa**) and your **Password** for sa.

If you specify another server, specify the **User Name** and **Password** for a pre-existing administrator account.

7. On the **IIS Configuration** page, choose the web site.  
Typically you should accept the default (**Install under Default Web Site**) by clicking **Next**.
8. Click **Install**.

**Result:** The next Wizard page displays the progress of the installation.

9. On the **Completed the Centricity Real-time Analytics Dashboard Setup Wizard** page, click **Finish**.

**Result:** The *Centricity Imaging Analytics Data Aggregation Engine* is now installed. If you chose not to install the Dashboard, the installation is finished.

If you opted to install the Dashboard, a new command window opens. **Do not close this window.** (You may minimize or move it, just do not close it.) The On the **Dashboard** window, the installation progress displays. This should take about 5–10 minutes.

10. Click **OK**.

**Result:** The upgrade is complete. To verify functionality, refer to *Post-Installation Verification Checklist* (31)

Next: [Set the Maximum SQL Server Memory Usage \(26\)](#)

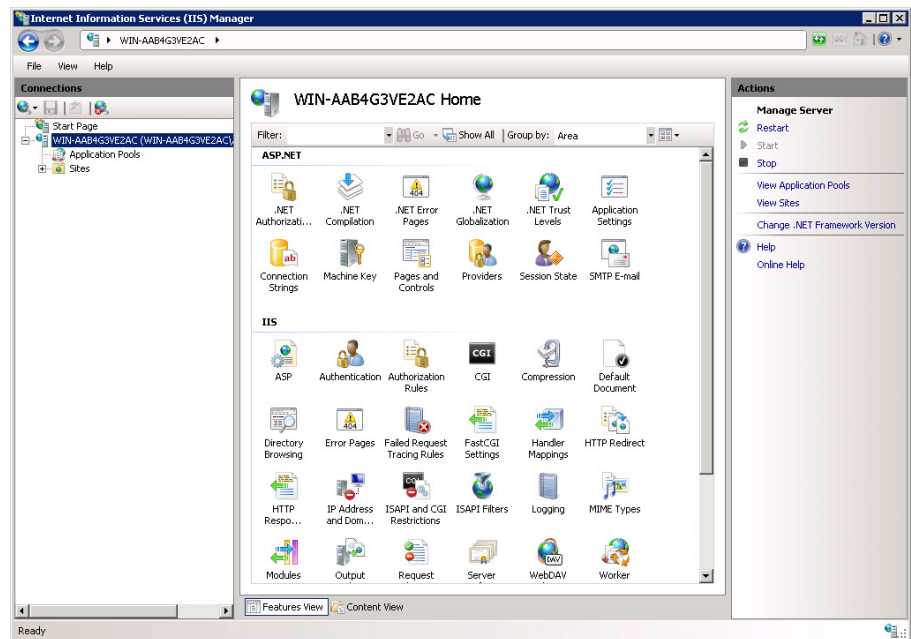
## 3.14 Location of Analytics\_Prod

The *analytics\_prod.zip* file and the *conf* folder are located at:  
*<AnalyticsMedia>\InstallerSetup\CCG*.

## 3.15 Post-Installation Verification Checklist

**Note** User account management is the customer's responsibility. See [Authentication \(13\)](#).

- Make sure you have [Set the Maximum SQL Server Memory Usage \(26\)](#).
- Before configuring the system, make sure the IIS web server is running.
  1. Register the new version of ASP.NET IIS. Refer to [5](#)
  2. Select **Start > Administrative Tools > Internet Information Services(IIS) Manager**
  3. Select the server which was created in the Analytics installation process.



4. In the **Actions** column on the right, make sure **Start** is greyed out and that **Stop** is not.
- Make sure SQL Server Services are running (Started).
    1. Select **Start > Administrative Tools > Services**.
    2. Make sure SQL services are started.





- In a web browser, make sure you are able to log in to Analytics, located at: <http://localhost/Analytics>  
User name: **viewer**.  
Default password: **V0yag3r**  
**Important** The default passwords are public information. You must change all default passwords before taking the system live.
- If you installed the Real-time Dashboard, make sure you are able to log in to it. Use a web browser to go to: <http://localhost/DundasDashboardv2.5.4>  
User name: **admin**.  
Default password: **V0yag3r**
- Make sure your DNS server IP address is correct.
  1. Open Local Area Connection.
  2. Open Properties from the Local Area Connection Status window.
  3. Select internet Protocol Version 4 (TCP/IPv4).
  4. Click Properties and make sure DNS server addresses are available.

Next: [Baseline Installation of the CCG Software \(33\)](#)

## 3.16 Install on VMware

If installing Analytics on VMware, the customer is responsible for:

- Having an operating system on a virtual environment that meets or exceeds the hardware specification.
- Providing remote access from this virtual environment via RDP.
- Being able to access the media from the OS virtual machine to setup by customer.
- Setting up VM farm and ensuring they provide a production VMware ESXi with Windows 2008 OS installed.



# Baseline Installation of the CCG Software

## 4.1 Installing CCG

**Note** If CCG is already installed at your site, refer to *Centricity Clinical Gateway for PACS Installation and Upgrade*, Chapter 3 - *Upgrading CCG*.

### 4.1.1 Prepare the Clinical Gateway Installation Files

**Note** Close all applications and disable any antivirus programs before beginning the installation procedure.

To begin the installation, right-click the *Install CCG.bat* file and select **Run as Administrator**.

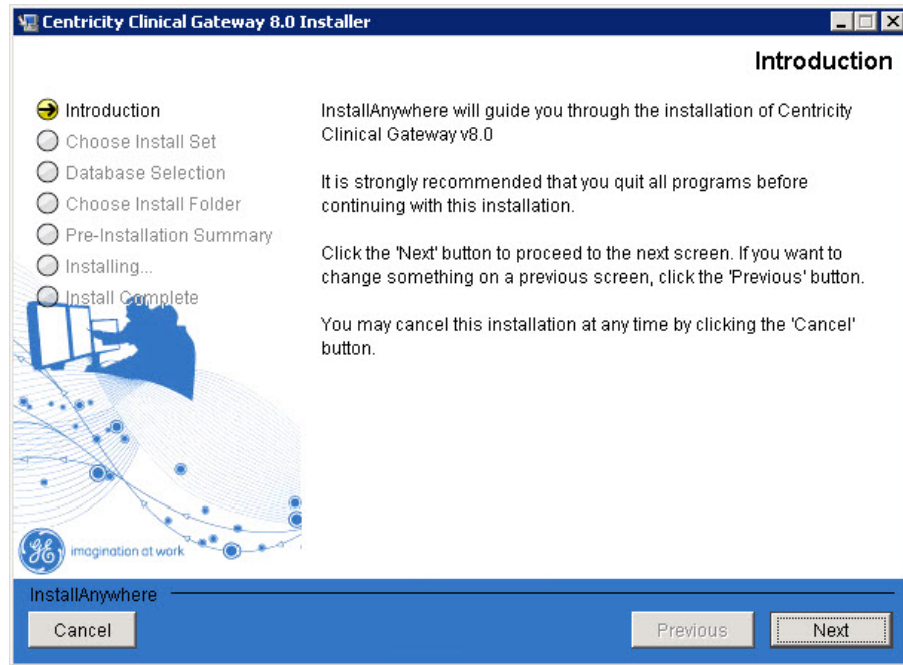
1. Insert CCG media into the drive.
2. Open the contents of the media.
3. Right-click the **Install CCG.bat** file and select **Run as Administrator**.

**Result:** This opens the **Centricity Clinical Gateway 8.0 Installer Wizard Introduction** page.

### 4.1.2 Start with InstallAnywhere Installation

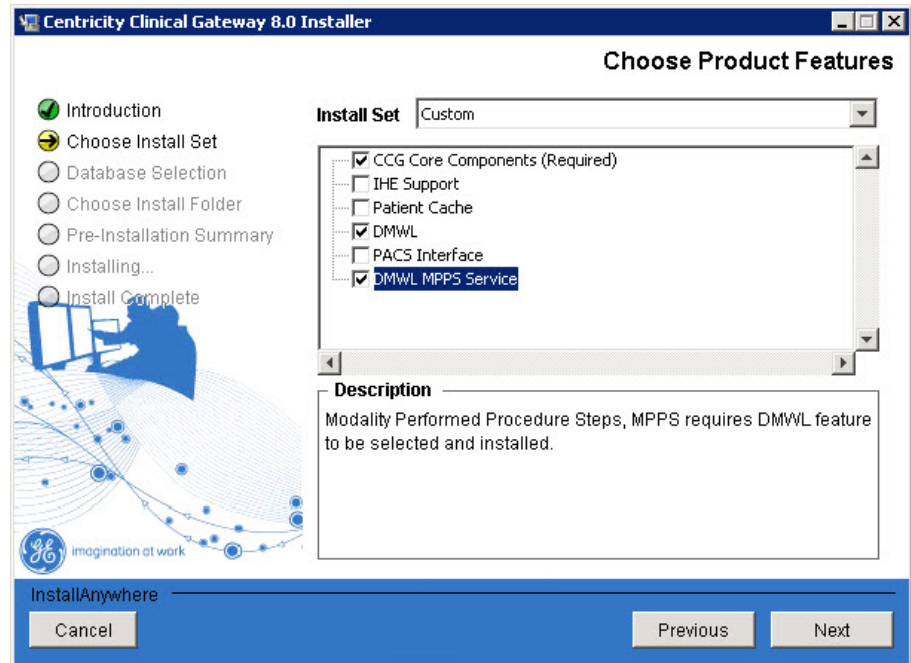
The following instructions describe how to install the Centricity Clinical Gateway software on Microsoft Windows 2008 Standard Edition Server operating system:

1. On the installer **Introduction** page, click **Next** to continue.



2. In the **Choose Product Features** window, select the options:

- CCG Core Components
- DMWL
- DMWL MPPS Service



3. Click **Next** to continue.

4. For CCG 8.0.1 SQL Server installs, you will need to fill out the following information:

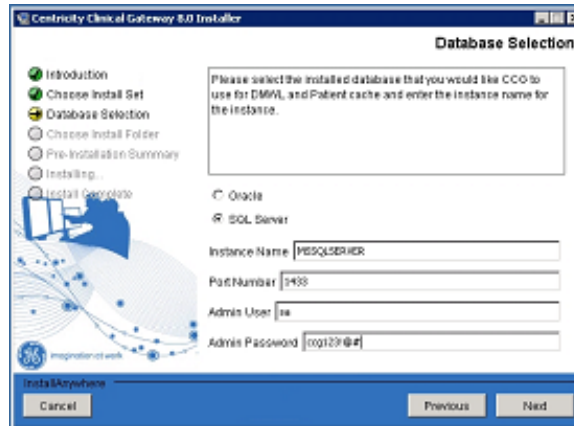
- Instance Name: Instance name given during SQL install

**Default:** MSSQLSERVER

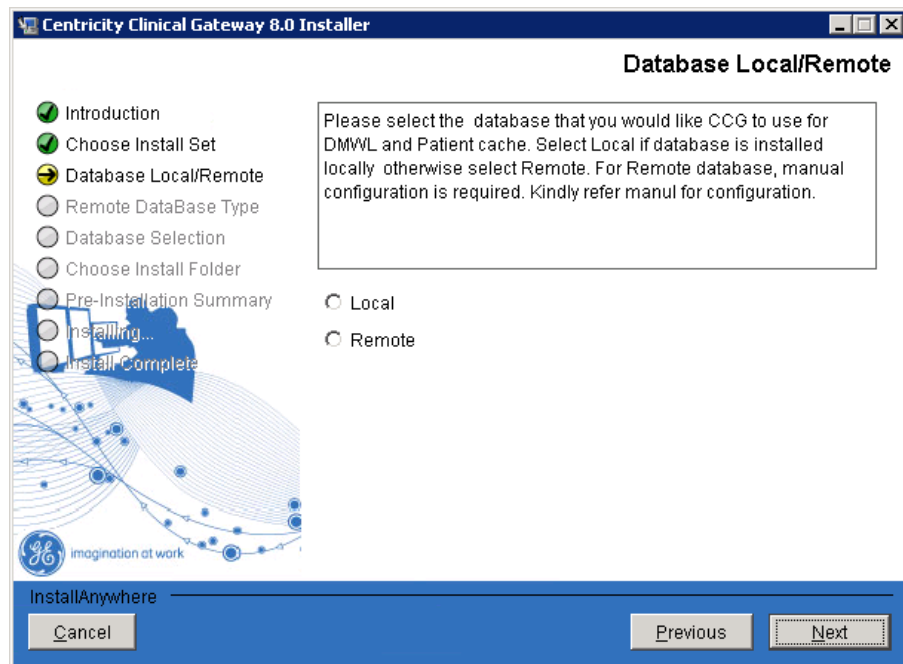
- Port Number: Port as given in the SQL install. If you installed SQL Server on the same server as Analytics as part of the Analytics install, the port number is:  
1433
- Admin user: **ccg**
- Admin Password: Admin Password as given in the SQL install.

**Default:.**

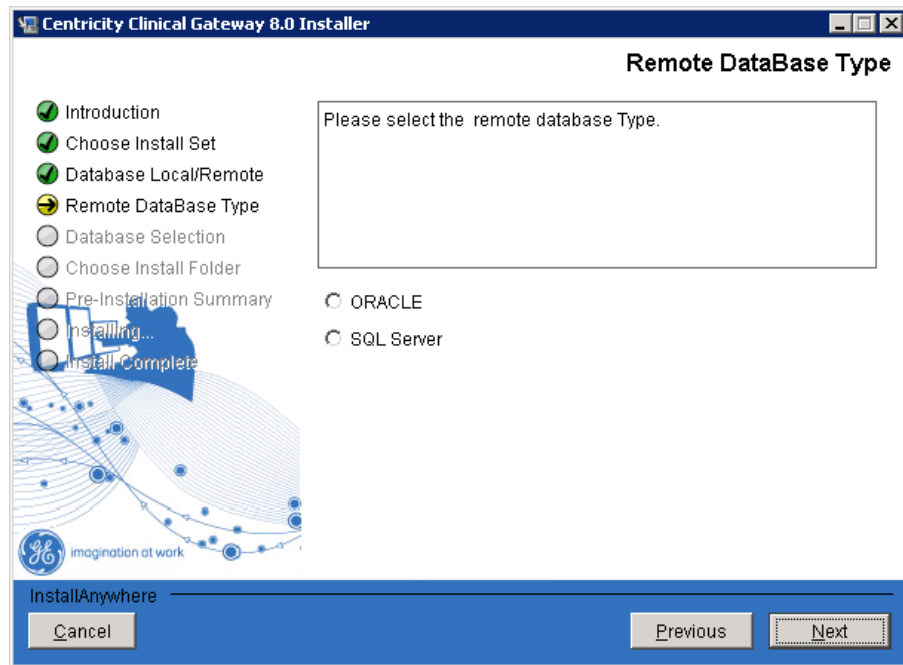
**Important** The default passwords are public information. You *must* change all default passwords before taking the system live.



5. For an Analytics installation, there is typically no DMWL database. Choose **Local**.

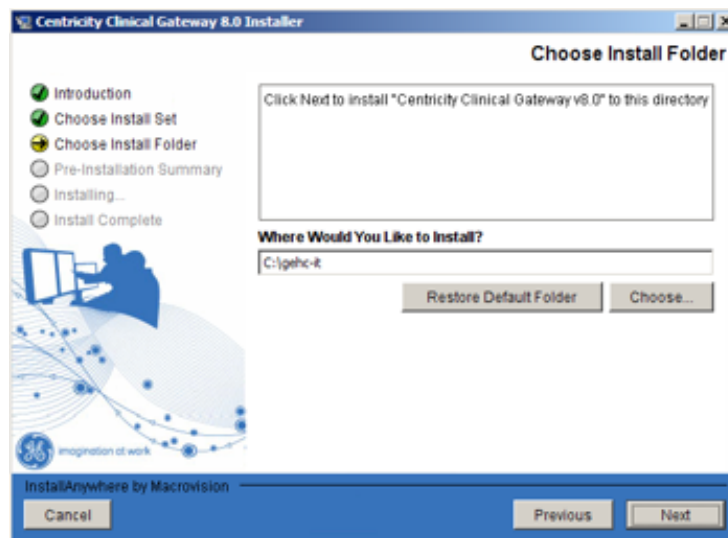


6. If the following page displays select **SQL Server**.



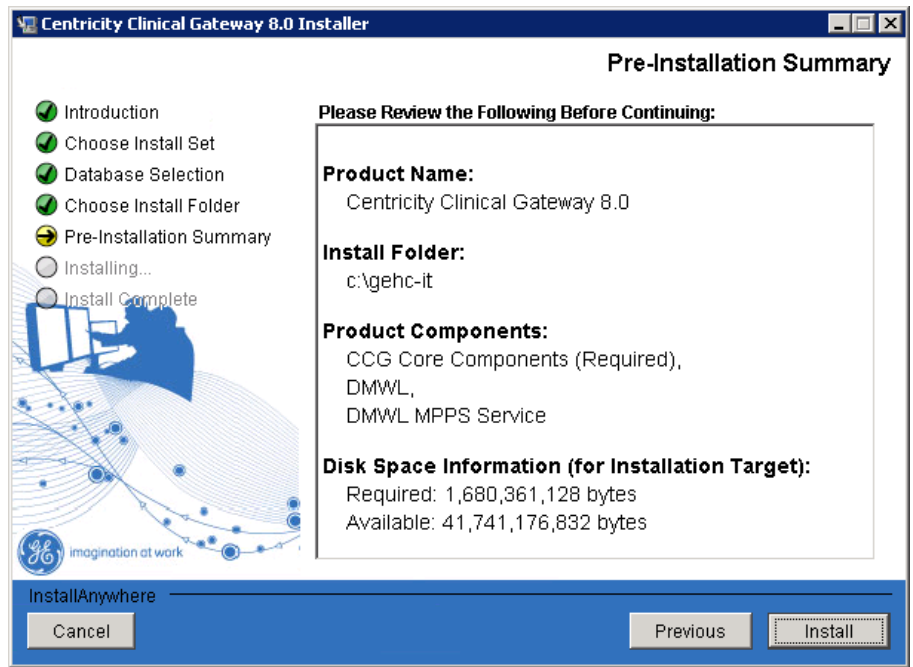
7. In the **Choose Install Folder** window, specify the location in **C:\** for Centricity Clinical Gateway software installation.

**Default:** c:\gehc-it.

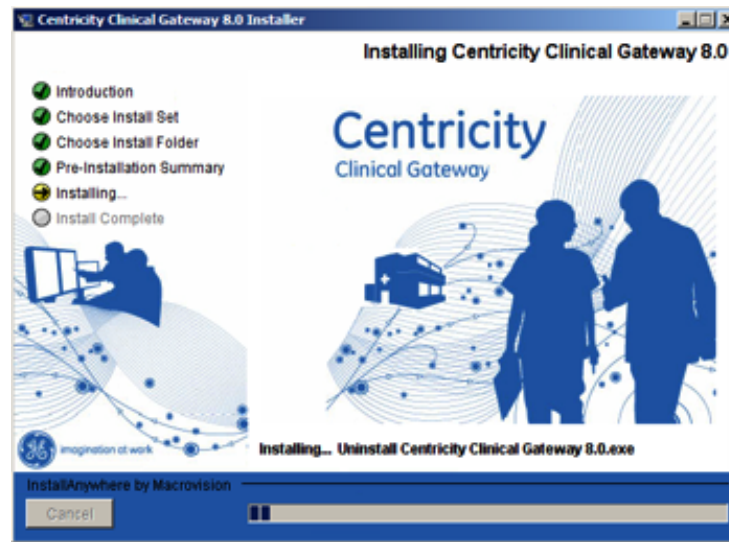


8. Click **Next** to continue.
9. In the **Pre-Installation Summary** window, verify the summary information, and click **Install** to continue. You may click **Previous** to change the selected install options.

**Note** The feature list and total size of the installation may differ from the illustration based on the components selected for installation.



10. Monitor the progress of the installation on the Installing Centricity Clinical Gateway 8.0 page.



11. On the **Install Complete** page, make sure the installation succeeded, then click **Done**.  
*Result:* The system reboots.
12. Log on as administrator once your system reboots.

## 4.2 Verify the Installation

### 4.2.1 Verify Programs are Installed

1. In the Windows 2008 Control Panel, open **Uninstall programs**
2. Confirm that the following items are installed:

- Centricity Clinical Gateway 8.0
  - CLOVERLEAF(R) Integration Services 5.7MB
  - CCG Cloverleaf Package
3. Close all open windows.

## 4.2.2 Verify Services are Available

1. On the Windows **Start** menu, select **Control Panel**, then select **Administrative Tools > Services**.
2. In the **Services** window, confirm that the following services are available:
  - Centricity Clinical Gateway Service Tools
  - Centricity Clinical Gateway Webmin Service
  - CLOVERLEAF(R) Integration Services 5.7MB
  - DMWL Prod Server
3. Close all open windows.

## 4.2.3 Confirm Web Login Page

1. On the Windows Desktop, double click **CCG Service Tools**
2. Verify that the CCG service tools login page appears.

**Note** If the login pages does not display, contact the RIC. See
3. Close the login page.

## 4.3 Configure the Backup

For information about configuring backups for CCG, see the *Upgrading CCG* chapter in the *Centricity Clinical Gateway for PACS Configuration and Integration Manual*.

## 4.4 Post Installation Procedures

### 4.4.1 Monitoring the Health of CCG

**Note** Monitoring is accomplished through SiteScope software. The site must have this software and a SiteScope server installed. If they do not, contact the Call Center for additional information. (See [Contacting GE Support \(6\)](#))

When the VPN was established to this site, SPS monitoring was also established. When the system is in 'Go Live' state, the SPS monitoring is initiated. There are no further requirements for monitoring the CCG.

**Note** Remote monitoring is unavailable if the site does not have an SPS server.

## 4.4.2 Log in to Webmin

To begin using the Webmin interface to access the service tools, open the Internet browser on the server that is running *or* double click the CCG Service Tools icon on the desktop and go to step 3.

1. Start Internet Explorer *or* double click the CCG Service Tools icon and go to 3.
2. In the **Address** bar, if you are working on the server where CCG is installed, type:

`http://localhost:10000`

If you are working remotely, type:

`http://<ipaddress>:10000/`

where **<ipaddress>** is the IP address of the CCG server.

The port number (**10000**) on which Webmin is running is configurable as shown in the CCG instruction manuals.

3. When the **Login to Webmin** dialog opens in the browser:

- a. Enter as the username.
- b. Enter **geservice** as the password.

**Important** The default passwords are public information. You *must* change all default passwords before taking the system live.

- c. Click **Login**.

4. The **Service Tools** window opens to the **Service** tab.

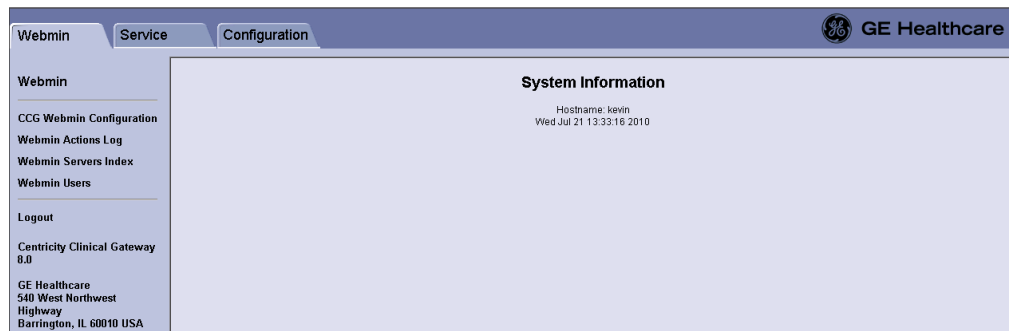
**Next:** Items for each of the Centricity Clinical Gateway service tool modules display in the menu list on the left.

### 4.4.3 Create a Local Sysadmin Account (Optional)

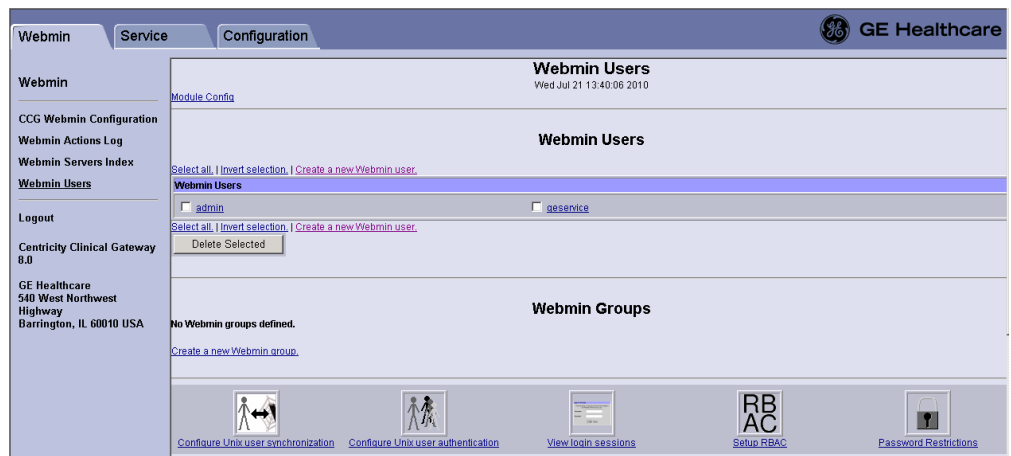
If you have a local sysadmin who is able to monitor the status of the system, you can create a limited-privileges account for the user. The following procedure creates a local sysadmin account with privileges to view the database and check the Cloverleaf thread status.

All other privileges are reserved for GE personnel only, as untrained use of the other Webmin tools could compromise the customer system and result in system downtime.

1. If you are not logged into Webmin, log in. See .
2. Click the **Webmin** tab to switch to the Webmin index page.



3. Click the **Webmin Users** menu item to open the page with the **Webmin Users** and **Webmin Groups** controls.



4. Click the **Create a new Webmin User** link.

**Result:** The **Webmin user access rights** dialog opens.



5. Enter the data in [Table 4.1](#) to configure a standard customer site administrator account.

**Note** Click the option titles to expand the list as in the Available Webmin modules above.

Table 4.1 User Access Rights

Field	Value	Comments
Username	localsa	Suggested username for local sysadmin.
Password	Set to... localadmin	This prevents the local user from changing the password. If the local sysadmin needs the ability to change the password,
SSL certificate name	None	N/A
Language	Default	N/A
Categories modules	Default	N/A
Personal theme	From Webmin Configuration	N/A
IP access control	Allow from all addresses	Check with the local sysadmin to see if stricter IP access controls are required.
Modules	Check ONLY the following: Database Viewer Interface Monitor	Enabling any additional modules leaves the system open to accidental corruption.

**Note** You may also want to create a Windows account for the local systems administrator.

#### 4.4.4 Hand Off to ITPS for Integration

Inform your Project Manager that the CCG is successfully installed and it is ready to be configured.

The ITPS Integration team handles the Quovadx license key.

### 4.4.5 Install and License Cloverleaf

For installation instructions, refer to the Cloverleaf manual. The ITPS Integration team handles the Cloverleaf licensing (refer to

### 4.4.6 Engage the HL7 Integration Team

For implementation please contact the GE Project Manager so they can engage the HL7 Integration Team. For a reload of the CCG application, please contact the ROC.

# Centricity Clinical Gateway Upgrade

## 5.1 Introduction

CCG v8.0.2.1 supports, automated upgrade from following versions of CCG:

- CCG v8.0.1

To upgrade from a version not listed above, manually uninstall the previous CCG version before launching the CCG v8.0.2.1 installer. Please refer to the respective backup & uninstall instructions for the CCG version that needs to be backed up & uninstalled.

## 5.2 Upgrade to CCG v8.0.2.1

The section describes how to upgrade CCG v8.0.1 to CCG v8.0.2.1.

CCG v8.0.2.1 includes Cloverleaf version 5.7MB, introduced starting with CCG 8.0. If upgrading from CCG 8.0.1 the license file can be reused.

### 5.2.1 Check the Drive chosen for installation for Sufficient Space

Before beginning an upgrade, check the chosen installation drive for sufficient space. The installer unzips the installation files to the Windows temp directory and backs up additional files to the C drive. See for specific installation space requirements.

### 5.2.2 Prepare the upgrade for Centricity Clinical Gateway

Before beginning the upgrade installation on the CCG server, using Windows Terminal services, ensure that there are no other remote desktop sessions active on the CCG server, make sure that those sessions are properly closed and logged off before proceeding.

Pre upgrade Checklist:

Steps	Action	Checkbox (X)
1.	Backup location and schedule need to be noted and reset manually. Login into CCG Webmin Service tools, Click on Service Tab, Click on System State, For Backup location: Click on Configuration, Note down the Backup storage location indicated, For Backup schedule, Click on Backup, Note down the Backup schedule.	<b>New backup location</b> <hr/> <b>New Backup Schedule</b> <hr/>
2.	Close all applications before beginning the upgrade procedure. Open the Task Manager to see if there are any open applications, if so, close any open applications.	
3.	Stop Inbound threads for all Cloverleaf sites. Open Cloverleaf IDE, open the prod site that is deployed on the machine, and stop the inbound threads by right clicking and selecting Stop. Repeat this procedure for each prod site that is deployed on the CCG machine.	
4.	Wait until all messages have been processed in all threads for all Cloverleaf sites. Open Cloverleaf IDE, open the prod site that is deployed on the machine, right click on the outbound threads and check to see if there are any pending messages. Confirm that all pending messages are processed.	
5.	Stop processes and threads for all Cloverleaf sites. Open Cloverleaf IDE, open the prod site that is deployed on the machine, and stop the prod site by right clicking on the top right corner and selecting Stop. Repeat this procedure for each prod site that is deployed on the CCG machine.	
6.	Stop Cloverleaf service. Open Control Panel, click Administrative Tools, click services, Stop the service "Cloverleaf Integration Services"	

**Note** Webmin passwords reset to default after the upgrade, additional users created or custom configurations will be lost.

**Note** Since the database is not dropped there will be no data loss during the upgrade process. However, we recommend doing a database backup before the upgrade begins using the process defined in the User Manual as this can be done without taking CCG down. You will also be prompted during the upgrade if you want to do a database backup, but it will significantly increase the downtime during the upgrade if you choose to do it at that time.

### 5.2.3 Upgrade Centricity Clinical Gateway

To upgrade CCG from previous versions:

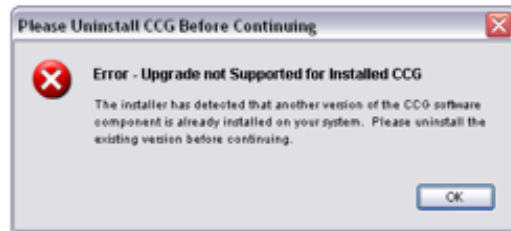
1. To install Centricity Clinical Gateway, you need the **CCG v8.0.2.1** installation folder.
2. To begin the installation, in the **CCG 8.0.2.1** folder, double-click the **Install CCG.bat** file.
3. After you double-click the installer executable, you will be asked to confirm the upgrade. Click **Yes**.

If the CCG v8.0.2.1 installer is launched on a system that does not contain a previous installation of the CCG software, but does contain a stand-alone Cloverleaf installation, the following message will be displayed. Click **OK**.

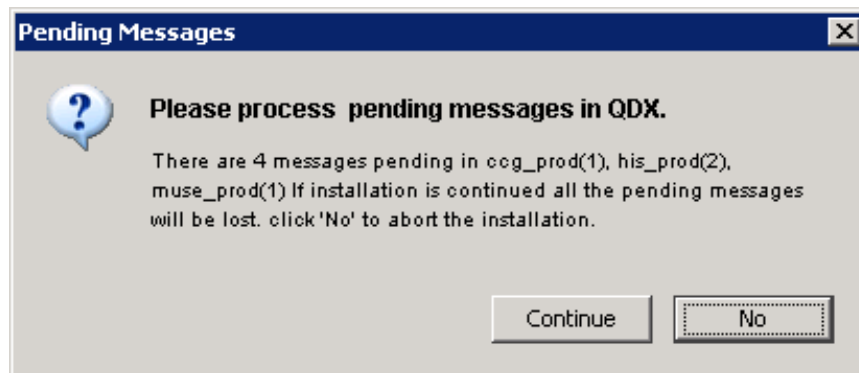


CCG v8.0.2.1 installer will now exit. Uninstall Cloverleaf version using “**Add/Remove Programs**” within **Control Panel**, and restart the CCG v8.0.2.1 installer.

If the CCG v8.0.2.1 installer is launched on a system which contains another version of the CCG software for which automated upgrade is not supported, the following message will be displayed. Click **OK**.



Once you confirm upgrade, the CCG v8.0.2.1 uninstaller will check for pending messages in cloverleaf sites. If there is any pending message, the following message will be displayed.

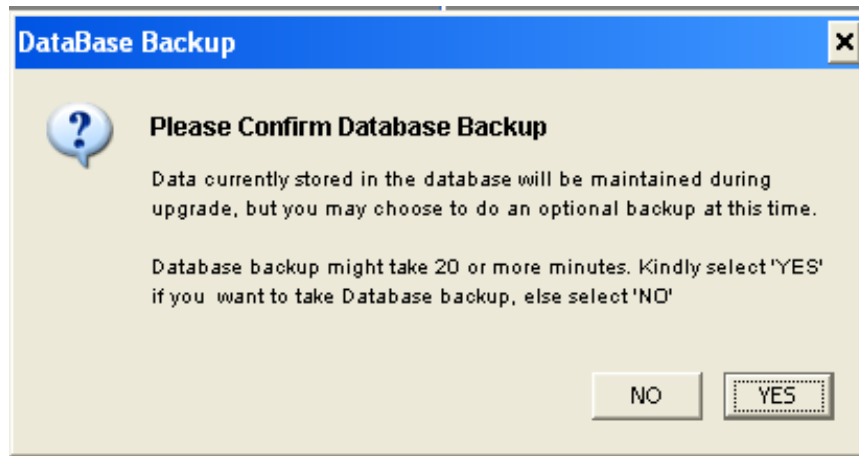


\* No of pending message and site names are given as a sample.

You can continue with the installation but pending messages will be lost. Please contact ROC for technical support on pending messages to be cleared.

If there is no pending message or you have selected to continue, the next screen will be

**Note:** Since the database is not dropped there will be no data loss during the upgrade process. Backing up the database during the upgrade is optional. The database backup screen will be shown only if the previous version of CCG has a feature installed which requires a database.

**Note**

Select 'YES' or 'NO'. If yes is selected installer will take backup of database to **C:\fullBackup** folder outside of the <CCG\_INSTALL\_DIR>, where <CCG\_INSTALL\_DIR> is the location CCG is installed..

Once you click on 'YES' or 'NO', un-installation will proceed. Uninstaller will zip all active Cloverleaf interfaces and save them to fullBackup outside of the <CCG\_INSTALL\_DIR>, where <CCG\_INSTALL\_DIR> is the location CCG is installed.. The Cloverleaf license file will also be copied to this location.

Once the un-installation completes, system will be automatically rebooted. (Select "Yes" to confirm the reboot).

Login to the system as a user with administrative privileges. The CCG v8.0.2.1 installer will automatically launch and continue installation of CCG v8.0.2.1.

Please remove any additional old Cloverleaf IDE icons on the Desktop on the CCG server before continuing.

Please refer to Chapter 3, Section 3: Centricity Clinical Gateway Software Installation, start with Step 3-1, and once done with the CCG installation proceed to Chapter 4, Section 2-4: Restoring settings from Backup.

## 5.2.4 Restoring settings from Backup

### 5.2.4.1 Backup

After the CCG upgrade, please use the CCG Service tools to reset the backup location and schedule according to site specific needs or from notes made prior to the upgrade. Login to CCG Webmin Service Tools, using the shortcut on the desktop (username = geservice, password = geservice), Click on Service Tab, Click on System State, For Backup location: Click on Configuration and enter the Backup location, Click on the Save button to confirm your backup location. For schedule, Click on Backup and enter the schedule that was previously noted down prior to the upgrade. Click on the Save button to confirm your schedule.

## 5.2.5 Autostart of Interfaces

If CCG was configured to automatically start the Cloverleaf interfaces on reboot, it will attempt to start them following the completion of the upgrade. However, until the new

license is in place, this script will fail. The script will resume normal operation on the first reboot after the license file has been copied into place.

## How to Connect Analytics to CCG Using Tcl ODBC

To install, configure, and enable Tcl ODBC:

1. *Obtain the Tcl ODBC Zip File (48)*
2. *Install Tcl ODBC (48)*
3. *Configure the Windows ODBC Connection (49)*
4. *Testing the Tcl ODBC Connection (53)*
5. *Configure the Tcl Procedures to Communicate with Analytics (55)*
6. *Validate the Configuration (57)*

**Note** This section is applicable to CCG 8.0.1 only. If you're using CCG 8.0.2, follow the instructions in .

### 6.1 Obtain the Tcl ODBC Zip File

- Download the Tcl ODBC zip file for Windows (all versions) from Sourceforge at the following URL:

<http://sourceforge.net/projects/tclodbc/files/tclodbc-win/2.3.1/>

### 6.2 Install Tcl ODBC

1. Unzip the *tclodbc.zip* file downloaded from Sourceforge to a local folder on the computer running Cloverleaf version 5.3 or higher.

**Note** You will at least need to have a default Cloverleaf site in order to set the shell environment to support installation of the tclodbc.

2. Select **Start > Run** and type **cmd** to open a **Command** window.
3. Type the following commands:
  - a. `cd desktop`
  - b. `cd tclodbc`
  - c. `setroot`



d. `setsite <cloverleaf_site>`

The **cloverleaf\_site** in the example below is **ccg\_prod**.

e. `hcitcl SETUP.TCL`

f. `hcitcl`

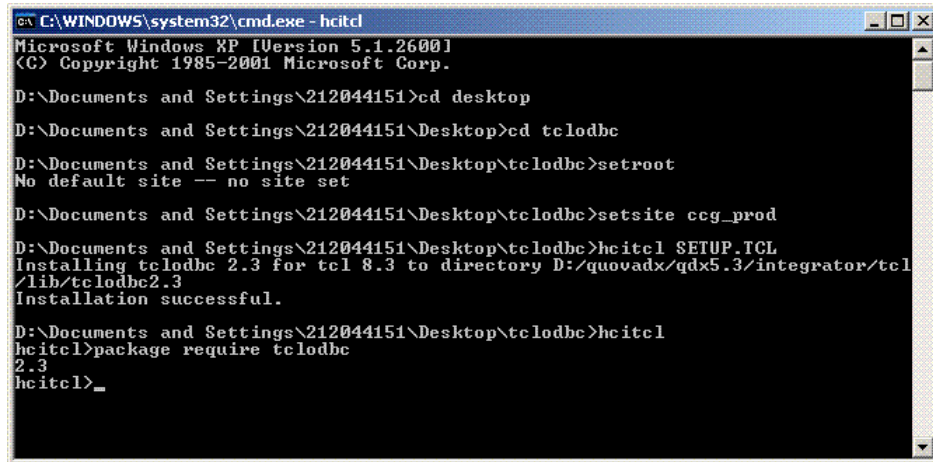
This command give you a `hcitcl` prompt.

g. At the `hcitcl` prompt type: `package require tclodbc`.

The return value from this command should be 2.3, the same as the version number of the installed `tclodbc` package.

h. Type `exit` twice (once to exit `hcitcl` and once to exit the Command window).

*Example:*



```

C:\WINDOWS\system32\cmd.exe - hcitcl
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

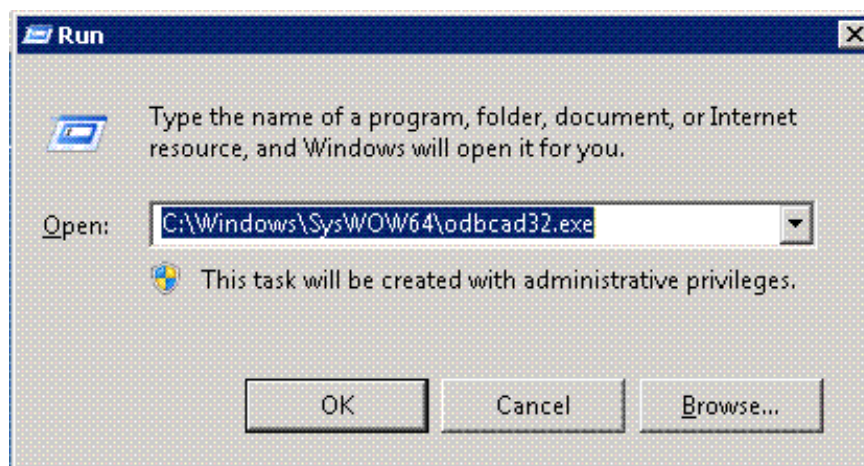
D:\Documents and Settings\212044151>cd desktop
D:\Documents and Settings\212044151\Desktop>cd tclodbc
D:\Documents and Settings\212044151\Desktop\tclodbc>setroot
No default site -- no site set
D:\Documents and Settings\212044151\Desktop\tclodbc>setsite ccg_prod
D:\Documents and Settings\212044151\Desktop\tclodbc>hcitcl SETUP.TCL
Installing tclodbc 2.3 for tcl 8.3 to directory D:/quovadx/qdx5.3/integrator/tcl
/lib/tclodbc2.3
Installation successful.
D:\Documents and Settings\212044151\Desktop\tclodbc>hcitcl
hcitcl>package require tclodbc
2.3
hcitcl>_

```

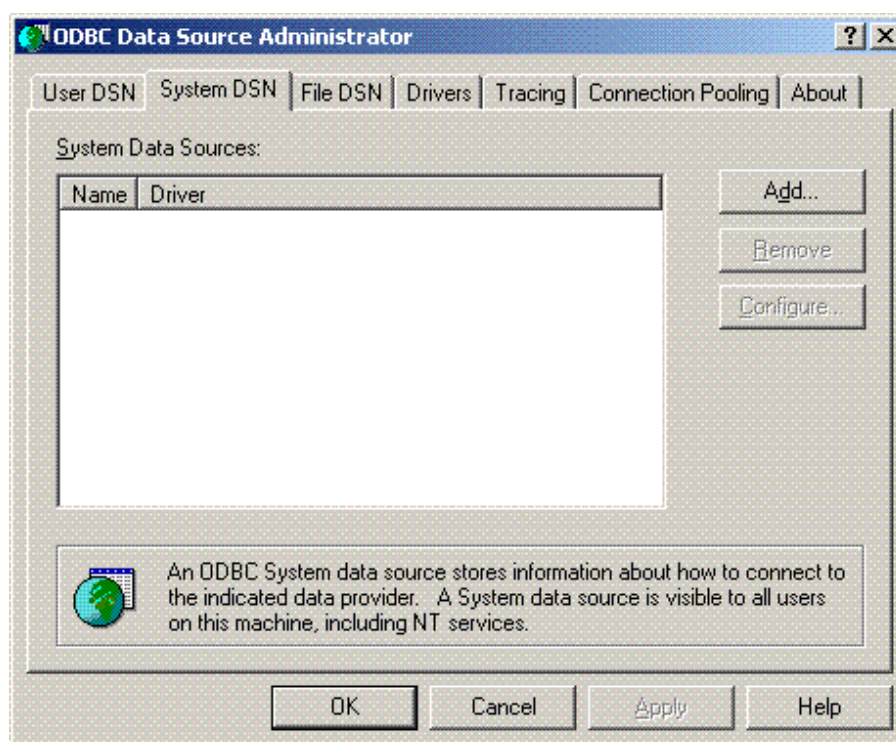
## 6.3 Configure the Windows ODBC Connection

Prerequisite: These instructions assume you are installing on a Windows Server 2008 R2 system with SQL Server 2008 R2.

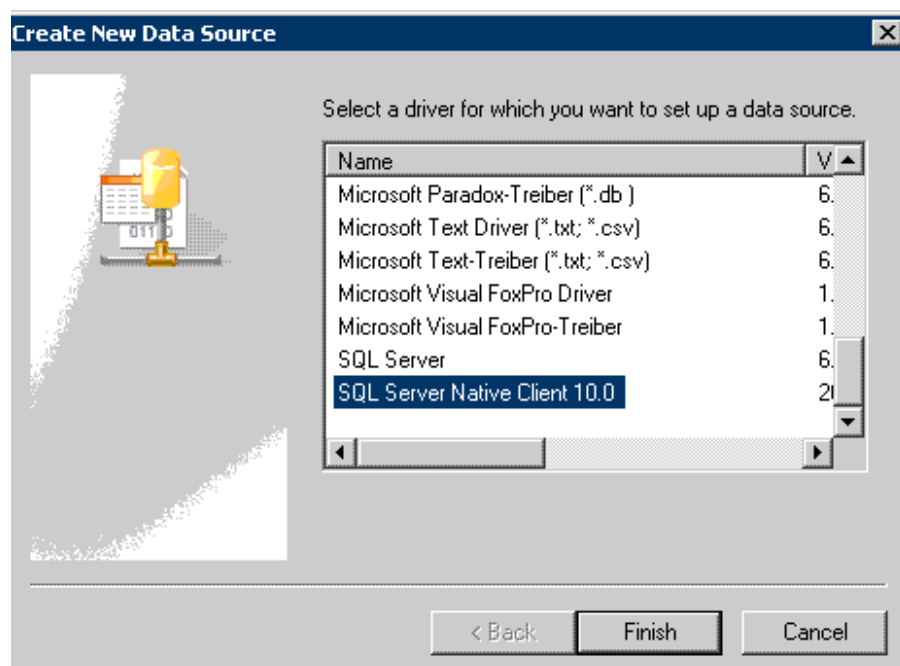
1. Launch the ODBC Administrator in 32 bit mode.
  - a. Select **Start > Run**
  - b. Enter `C:\Windows\SysWOW64\odbcad32.exe`.
  - c. Click **OK**.



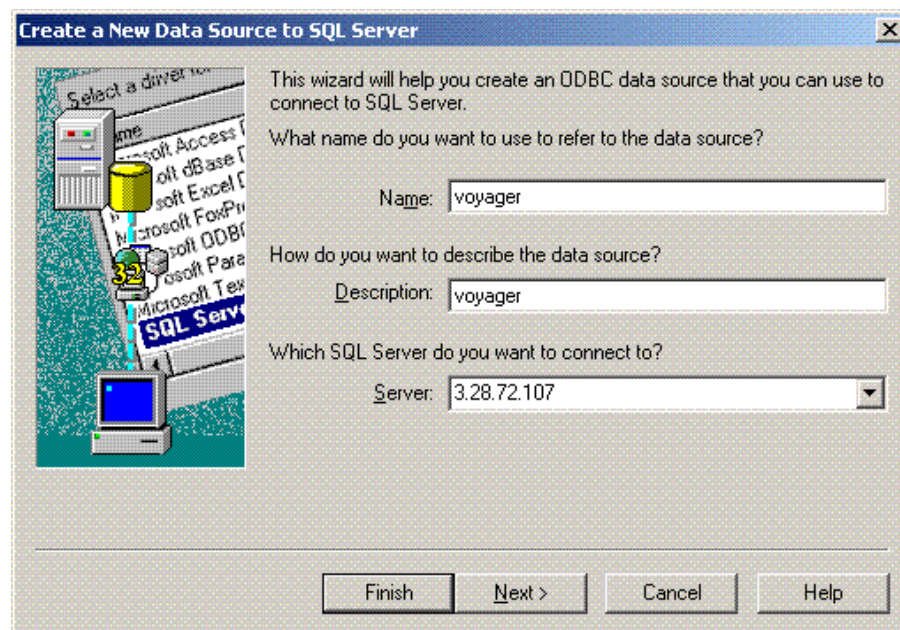
2. Select the **System DSN** tab.



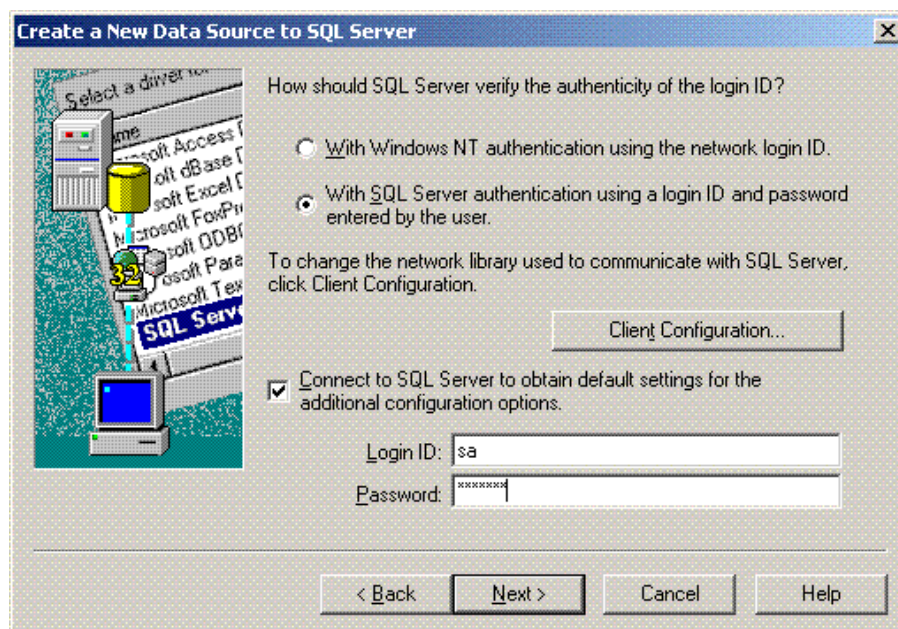
3. Click **Add**.
4. Scroll down the driver list and select **SQL Server Native Client 10.0**.



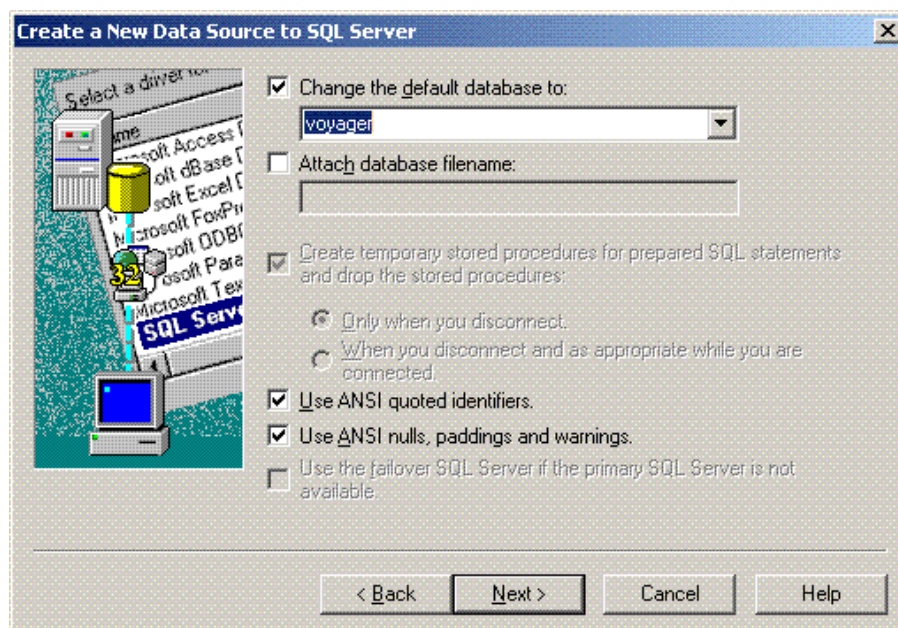
5. Click **Finish**.
6. Fill in a name, description, and sql server instance ip address in the first section of the **Create a New Data Source to SQL Server** wizard.



7. Click **Next** to continue.
8. Select **With Sql Server authentication using a login ID and password entered by the user**.
9. Enter the appropriate user name in **Login ID**.
10. Enter the appropriate **Password**.

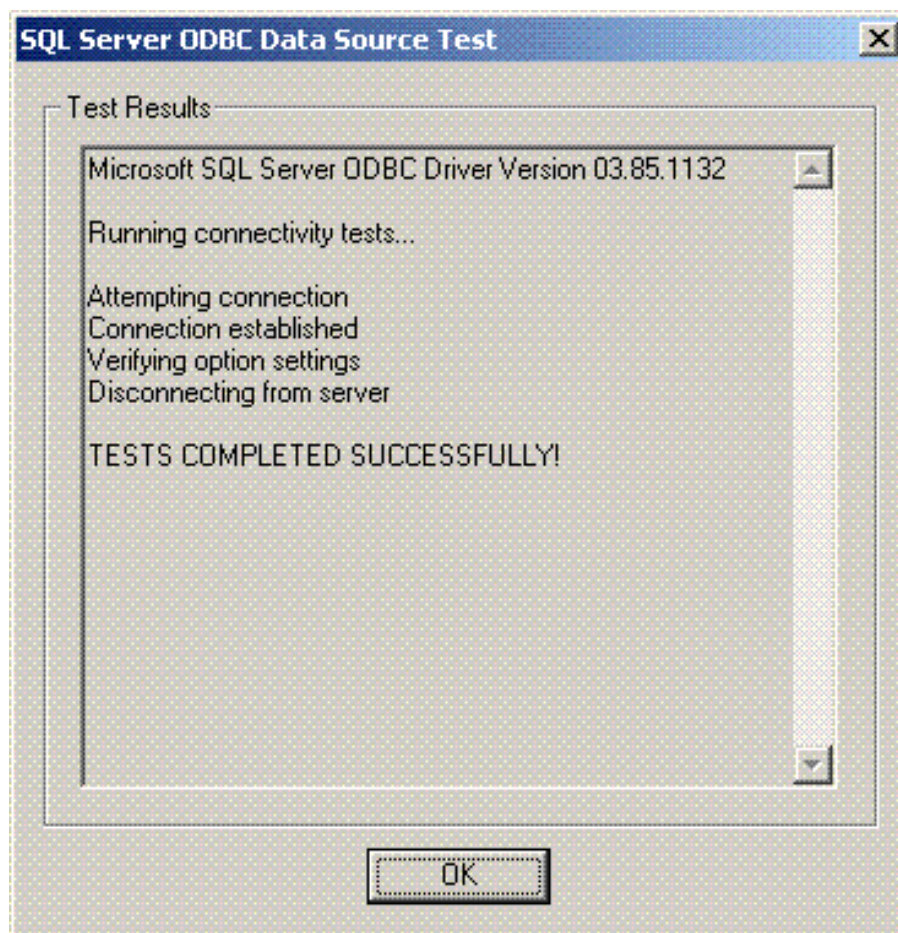


11. Select the **Change the default database to:** checkbox
12. From the dropdown menu, select the appropriate database instance for your application (typically, **Analytics**).
13. Click **Next** to continue.



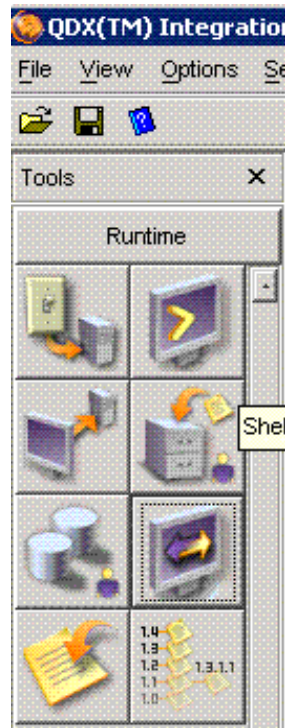
14. Click **Finish** when presented with more options related to performance and tuning.
15. Select **Test Data Source** and review the output. The last line should read TESTS COMPLETED SUCCESSFULLY!





## 6.4 Testing the Tcl ODBC Connection

1. This test is best accomplished by launching the cmd shell window from the Cloverleaf IDE in order to ensure that the environment variables are set correctly.



2. In the **cmd** window, type the following commands:

- a. `hcitcl`

This launches the Tcl interpreter.

- b. `package require tclodbc`

This loads the tclodbc package.

- c. `database connect <identifier> <odbc db name> <username> <password>`

**<identifier>** names the connection within this Tcl session. This can be any legal identifier.

**<odbc db name>** is the windows odbc administrator name created during the odbc setup. Typically, this is analytics.

**<username>** is the database username.

**<password>** is the database password for the specified username.

**Result:** When the command is successful, the return value is the same as the user specified identifier for the hcitcl connection.

An error is returned when the login fails, the error is dependent on the reason for the connection failure (i.e. Data source not found indicates that the database name specified in the command was not the same as a 32 bit datasource name in the windows odbc administrator.

3. A sample sql command can be given to test the connection by using the identifier followed by a sql statement in quotation marks.

*Example:*

```

Administrator: ROOT = C:\quovadx\gdx5.7MB\integrator SITE = voyager - hcitcl
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

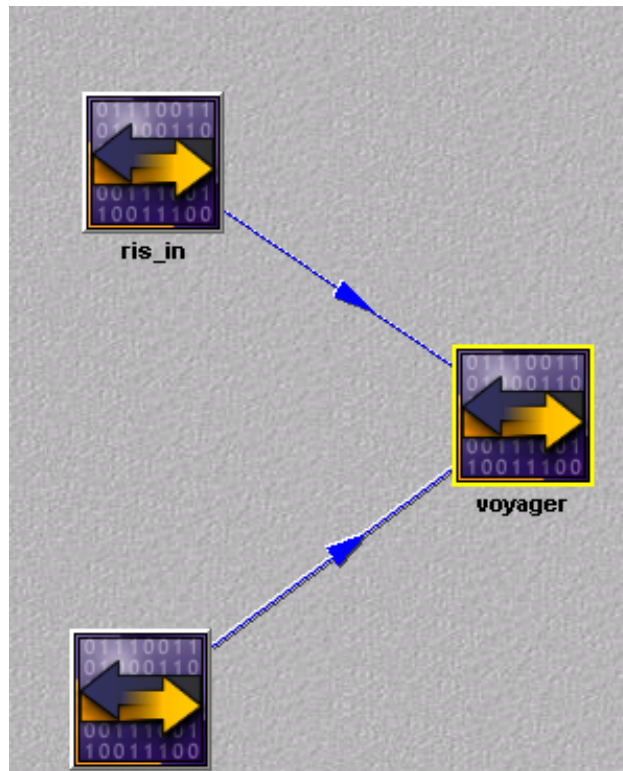
C:\quovadx\gdx5.7MB\integrator\voyager>hcitcl
hcitcl>package require tclodbc
2.3
hcitcl>database connect myDB voyager sa CANa11
myDB
hcitcl>myDB "select count(*) from exams"
146267
hcitcl>_

```

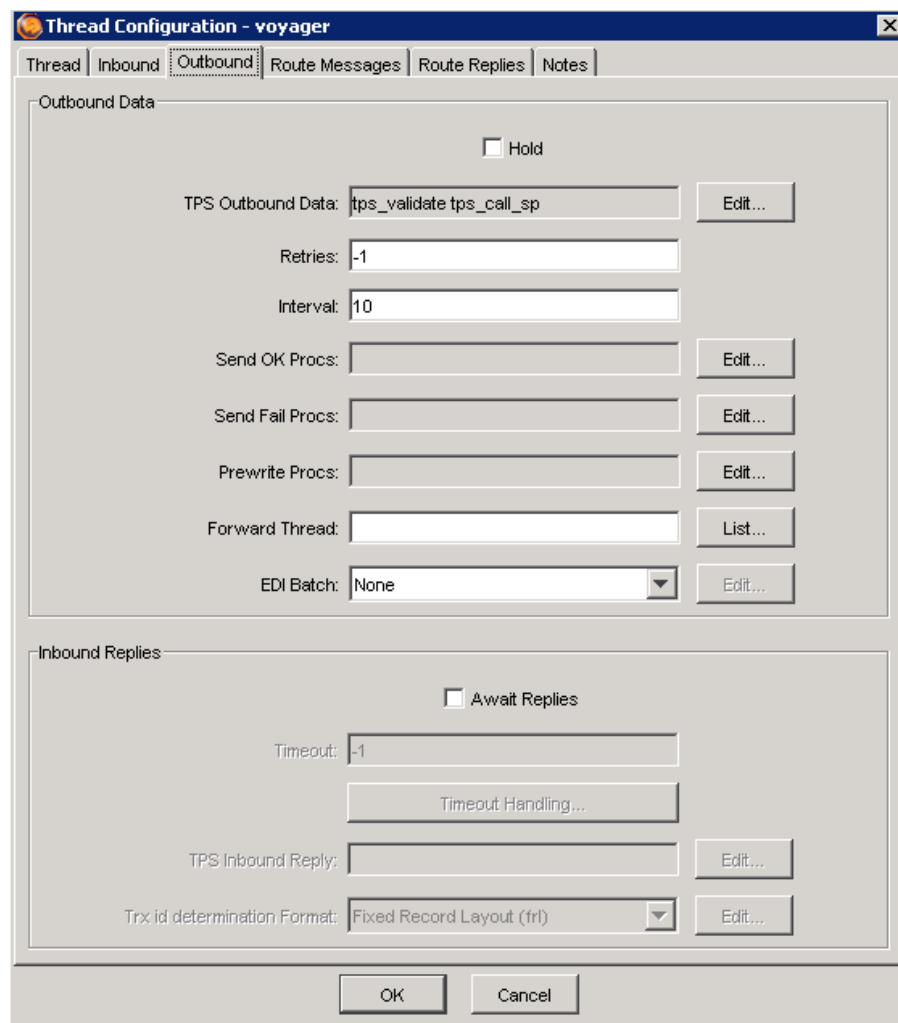
## 6.5 Configure the Tcl Procedures to Communicate with Analytics

To configure the Cloverleaf Analytics standard site Tcl Procedures to communicate with the Analytics standard site:

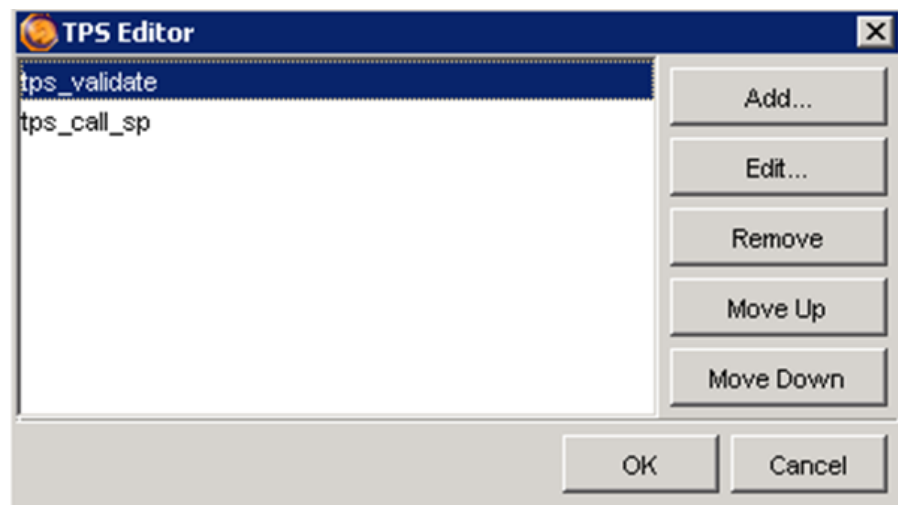
1. After deploying the Standard Voyager Cloverleaf Site, open the Network Configurator.



2. Open the thread properties for the voyager thread and click on the inbound tab.

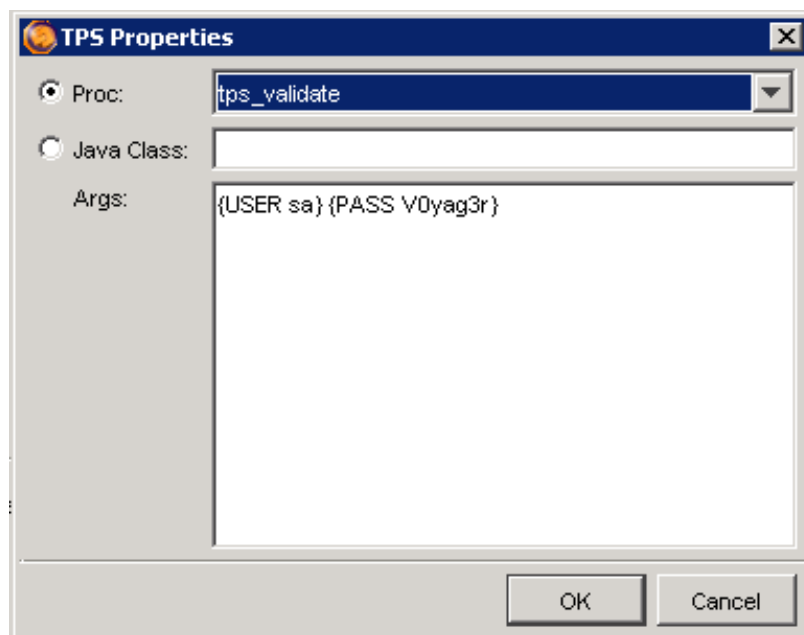


3. In the TPS Outbound Data configuration pane, click the Edit command button to open the TPS properties window TPS Editor.



4. Highlight the tps\_validate TCL procedure and click the edit command button to bring up the user arguments window.
5. Input the user and user password arguments in the form of {USER <username>} {PASS <user pass>}





6. Click the OK command button in the TPS Properties Window, then the OK command button in the thread properties window to return to the Network Configurator window, click the save icon (floppy disk) in the shortcut command button to save the Network Configuration, then launch the Network Monitor Tool.
7. In the process monitor pane, right click the voyager process to bring up the process command popup and select **Control > Stop**.
8. Allow the process to stop at which point the color of the process should change from Green to Red.



Running process is green



Stopped process is red

9. After the process has stopped right click the voyager process icon in the process monitor to bring up the process command popup and select **Control > Start**.

## 6.6 Validate the Configuration

1. Make sure that the client is sending transactions through the cloverleaf receiving thread, after a transaction has been sent from the client hospital system modality, right click the voyager thread to bring up the thread command popup and select **Control > Full** to bring up the full control dialogue window.
2. From within the full control dialogue window select and execute the watch output command button.
3. Review the output and ensure that the output shows an instance of the string "return from sql cmd is 0"

```
13101031301',@patient_class= 1 ,@location_code= 0307 ,@attnd_staff_code= 019
319',@attnd_staff_last_name='Francis',@attnd_staff_first_name='David',@attnd_
staff_middle_name='Lee',@id_domain_code='SUH',@identifier='2347434-9',@facili
ty_code='SH',@last_name='DILKS',@first_name='BETTY',@middle_name='A',@gender=
'F',@birth_dttm='01/08/1992 00:00:00',@home_address='5681 E BUCKINGHAM WAY ',
@home_postal_code='93727',@home_province='CA',@home_country='USA',@home_phone
_nbr='(559)375-9400',@ethnic_origin='W';select @rtn
return from sql comd is 0
dispList is {KILL message0}
```

Done

# Site Configuration

To configure a site, you:

1. [Edit the Client Configuration Files \(59\)](#)
2. If necessary, [How to Change the Backup Configuration \(60\)](#)
3. [Load Master File Data \(64\)](#)
4. [Map HL7 to Analytics Parameters \(66\)](#)

## 7.1 Edit the Client Configuration Files

You need to configure basic parameters ([App.config](#)) which apply to all Analytics clients. Depending upon the site, you may also need to configure columns on the grid in the Analytics Real-time Dashboard clients ([GridColumns.Config](#)).

To edit a configuration file:

1. Log in as Administrator on the server and select **Start > Administrative Tools > Internet Information Services (IIS) Manager**  
*Result:* This opens the **Internet Information Services (IIS) Manager** window.
2. In the Connections column, select [\[server where IIS is running\] > Sites > Default Web Site > Analytics](#)
3. Right-click on **Analytics** and select **Explore**.  
*Result:* This should open to the Analytics Web Application home directory.
4. Make a backup copy of a config file by selecting it, then pressing **Ctrl-c**, then pressing **Ctrl-v**.
5. Right-click the config file and select **Open** to open it in the default text editor (probably, *Notepad*).

Refer to the following for the proper configuration settings:

- 
- [GridColumns.config \(60\)](#)

## 7.1.1 GridColumns.config

The entries in [GridColumns.config](#) specify which columns in the Real-time Dashboard grid are visible, how the columns are labeled, and which columns the user can edit. The config file specifies column parameters in xml format. Each **add** element in the file corresponds to a column on the data grid. The attributes of each **add** element control a column display.

*Example:*

```
<?xml version="1.0"?>
<GridColumnsConfiguration>
  <gridColumns>
    ...

    <add name="dept_code" header="Department" readOnly="true" />
    ...

  </gridColumns>
</GridColumnsConfiguration>
```

In this example, the **dept\_code** column is given the heading, **Department**. The column is read-only.

Attribute	Description
<b>name</b>	The name of the database column. <b>Note:</b> <b>Timer</b> does not exist as a column in the database. It is created on the fly.
<b>header</b>	The header displayed in the grid column. If the site-specific terminology is different than the GE-standard terminology, change the headers to reflect the site-specific terminology.
<b>readonly</b>	To prevent users from editing data in the column, set <b>readonly</b> to "true". To allow the user to edit data in the column, set <b>readonly</b> to "false". Typically, you keep most columns read only. <b>Note:</b> You must set <b>Timer</b> to <b>readonly="true"</b> .
<b>group</b>	Setting the group value of multiple grid columns to the same string will group the columns together when selecting new columns to display.

## 7.2 How to Change the Backup Configuration

When you install Analytics, the installer schedules a script to back the database up every day at 11:00 pm, and to keep the last 3 backups. The script stores backups in the default SQL Server backup directory (on the same RAID as the database itself).

**Note** The automated backups are full backups of the database. There should be no need to do incremental backups.

Typically, when the SQL Server is installed on the Analytics server, the default database backup location is: [D:\Analytics\Backup](#). All the data files are under [D:\Analytics\Data](#).

Dundas files are located in *C:\Program Files (x86)\GE Healthcare\Centricity Analytics\Dundas*.

SQL Server stores the default backup location in the Windows registry. To find this item in the registry, see the instructions for changing the default backup location in the last bullet item in the list below.

**Note** There is a *Backup* directory in the Analytics application directory. This directory is used to back up some intermediate data used in an upgrade, not the SQL Server data.

**Note** The following procedure documents how to do a *Voyager* backup.

- If you want to back up the Dundas Dashboard database, select *Dundas\_Dashboard\_Datastore* instead of *Voyager* in step 3.
- If you want to back up the ASP.net database, select *aspnetdb* instead of *Voyager* in step 3.
- If you want to back up to and restore from a different server, you have to manually initiate the backup.

To configure a backup so you can copy it to a different server:

1. Log into the Analytics server as Administrator.
  2. Launch *SQL Server Management Studio* (**Start > All Programs > Microsoft SQL Server 2008 R2 > SQL Server Management Studio**) and log in to the Analytics database.
  3. In the **Object Explorer**, navigate to **localhost > Databases > voyager**.
  4. Right-click on **voyager** and select **Tasks > Back Up** from the context menu.
  5. Select the **Options** page.
  6. Select **Back up to a new media set, and erase all existing backup sets**.
  7. When you initiate the backup it will then create a single backup set which you can copy to a different server.
- You enable, disable, or change the timing of the backup from *SQL Server Management Studio*.
    1. Log into the Analytics server as Administrator.
    2. Launch *SQL Server Management Studio* (**Start > All Programs > Microsoft SQL Server 2008 R2 > SQL Server Management Studio**) and log in to the Analytics database.
    3. In the **Object Explorer**, navigate to **localhost > SQL Server Agent > Jobs > Backup Voyager Database** and double-click **Backup Voyager Database**.
  - To enable or disable the backup:
    1. Select the **General** page.
    2. Select or deselect **Enable**.
    3. Click **OK**.

**Result** This opens the **Job Properties — Backup Voyager Database** window.

- To change the backup schedule:
  1. Select the **Schedules** page.
  2. Double-click the **Voyager Backup Job Schedule**.

This opens the **Job Schedule Properties — Voyager Backup Job Schedule** window.

**Job Schedule Properties - Voyager Backup Job Schedule**

Name:  Jobs in Schedule

Schedule type:  ☒ Enabled

One-time occurrence

Date:  Time:

Frequency

Occurs:

Recurs every:  day(s)

Daily frequency

☒ Occurs once at:

☐ Occurs every:  hour(s)

Starting at:

Ending at:

Duration

Start date:  ☐ End date:

☒ No end date:

Summary

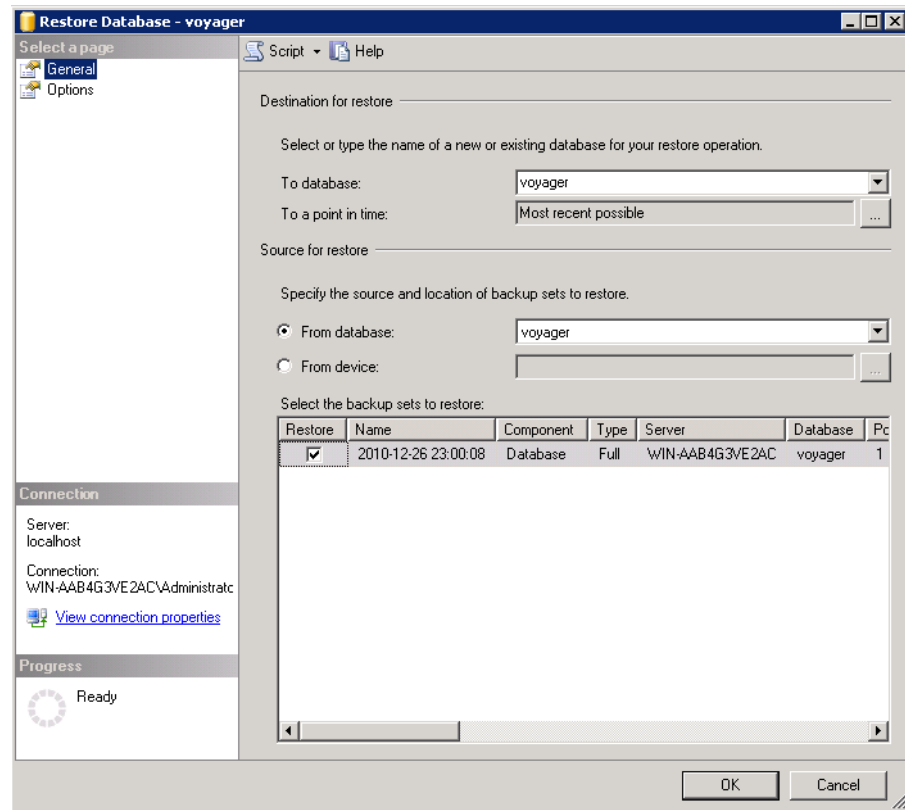
Description:

3. Change the frequency or time of the backup then click **OK**.
- If you need to change the number of backups the system keeps:
  1. Open the Analytics application and log in to the **Settings** screen (see [How to Log in to the Settings Screen \(67\)](#)).
  2. Select **Configuration Data** in the **Settings** column and **Configuration** in the **Data Tables** column.
  3. Select the row with **NUMBER OF ONLINE BACKUPS**. in the **config\_name** column.
  4. Click the edit icon ( ).
  5. Click **Save**. For more information about the **Settings** screens, see [Analytics Administration and Customization \(67\)](#).
  6. Change the **config\_value** to the number of backups you want to keep.
- If you want to change the default location of SQL Server backups (and, thus change the location of Analytics backups):
  1. On Windows server on which SQL Server is running, select **Start > Run**.
  2. Type **regedit** and click **OK**.  
*Result:* This opens the registry editor.
  3. Navigate to **HKEY\_LOCAL\_MACHINE > SOFTWARE > Microsoft > Microsoft SQL Server > <Server instance> > MSSQLServer.<Server instance>** is the name of the SQL Server installation (which should be similar to: **MSSQLSERVER**).
  4. Right-click on **BackupDirecotry** and select **Modify**.
  5. Change the **Value data** to the new SQL Server default backup directory and click **OK**.  
*Result:* This saves the new default backup directory.

6. Exit *Regedit*.

## 7.2.1 How to Restore the Database Backup

1. Log into the Analytics server as an administrator.
2. Launch the *SQL Server Management Studio* (**Start > All Programs > Microsoft SQL Server 2008 R2 > SQL Server Management Studio**) and log in to the Analytics database.
3. In the Object Explorer, navigate to **localhost > Databases > voyager**.
4. Right-click on voyager and select **Tasks > Restore > Database**.
5. From the **Restore Database — voyager** dialog, select the backup set you want to restore and click **OK**.



6. Log into Analytics and see if you can access the KPIs.

If there are none available:

- a. Log out of Analytics.
- b. Log into the database as sa.
- c. Enter the following two commands:

```
sp_change_users_login 'auto_fix', 'analyst'
sp_change_users_login 'auto_fix', 'ccg'
```

- d. Log back into Analytics to make sure you can now access the KPIs.

## 7.2.2 Other Database Maintenance

You should not have to manually rebuild table indexes or do any database maintenance other than configure the backups. Analytics automatically rebuilds the table indexes when necessary.

## 7.3 Load Master File Data

Master File Data (MFD) tells Analytics how various systems (PACS, HIS, RIS, and other systems) at the site are configured. When you install Analytics or reconfigure the systems at a site, you need to be able to load a large quantity of master file data into Analytics. Use a Master File Data bulk loader Excel Workbook to load this data.

If you just want to edit or add a few Master File Data records, you can use the **Settings** screen in Analytics.

To load large quantities of Master File Data:

1. Copy an empty MFD Loader Workbook from the Analytics media. This file is located at: [<Analytics media>\Installer Setup\MasterFileDataLoader\Analytics-MasterFileDataLoader.xls](#). The file is a Microsoft Excel spreadsheet containing macros which call SQL stored procedures in Analytics.
2. Go to the **DB Configuration** sheet and enter the IP address, username, and password of the SQL Server, and the name of the Analytics database.

Default username: **sa**

Default password: **V0yag3r**

**Important** The default passwords are public information. The site must change all default passwords before taking the system live.

3. Review the MFD Workbook to familiarize yourself with the data required. See the first page of the MFD Workbook for a summary of each sheet. Comments at the top of each column in the Workbook summarize the purpose of each column. (Hover over the red triangle in the top-right corner of a column header to view its comment.)
4. Collect, review, and import your Master File Data into the MFD Workbook. If possible, you should gather and import the data incrementally. That is, once you have some data you should go through the following steps to import it into the MFD Workbook and validate it.
  - a. Work with the appropriate people at the facility to begin gathering the required data.
  - b. Export the data from the systems where it is currently stored into flat Excel or text files (or any other format which you can import into Excel).

**Note** If you are collecting data from paper-only records, you can enter the data directly into the MFD Workbook. Skip to step **e**.

- c. If not in Excel, import the data into Excel and organize the data into sheets and columns to match the sheets and columns in the empty MFD Workbook.
- d. Import your data from the spreadsheet you just created into the MFD Workbook.
- e. Review and Validate the data. You should manually review the data with the customer. You should also click **Validate** periodically as you import more data into the Workbook.



**Result:** **Validate** performs rudimentary error checking on the data in the current sheet. You can click **Validate** as many times as you like. After validation, invalid rows are indicated by a message in the last column.

- f. After making any changes to the MFD data, save the file with a new version number (for example: *General\_Hospital\_v04.xls*).
- g. Periodically, send the latest version of the Workbook to the GE integrator who will review the file to make sure the data is what is required.
5. Send the final version of the MFD Workbook to the GE integrator for review.
6. Once you have determined that the data is correct, click **Save**. You can **Save** the data from any workstation that has network access to the Analytics server.

**Result:** This loads the data from the current sheet into the Analytics database. If there is an error, **Save** skips that row and notes the error in the last column. If the **Save** cannot insert a value into a table because of a mismatch or incorrect value, it will stop executing. The **Logs** sheet lists the following:

- The name of the procedure called by the **Save** button.
- The parameters passed to the procedure.
- The return value of the procedure.

## 7.4 CCG Interface Management

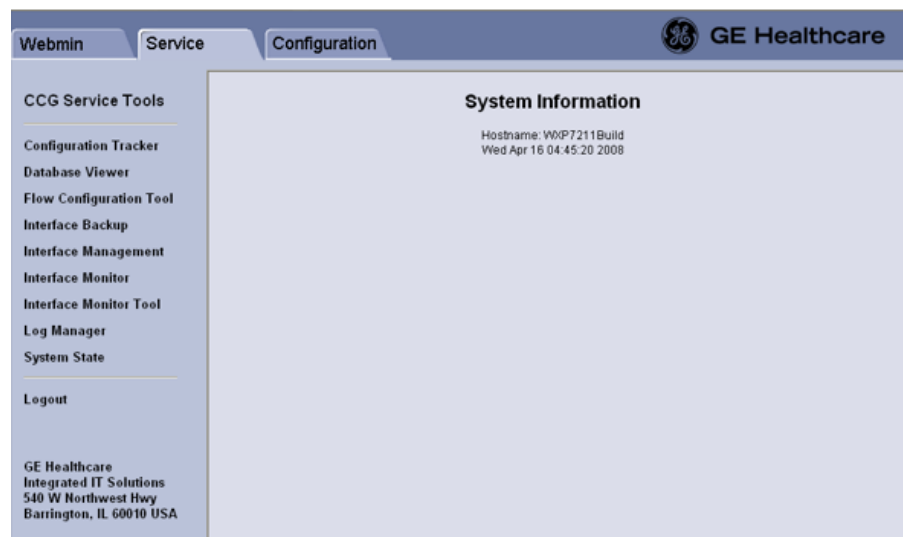
CCG interfaces provide mapping, translation, and routing for HL7 messages. The Analytics media includes a *prod* file for the Analytics-specific interface.

To deploy and activate interfaces in CCG:

**Note** While deploying the interface, ensure that the *Cloverleaf IDE* service is stopped.

1. Log in to *Webmin* and click the **Service** tab.

**Note** When you log in, you may get a warning message from **Internet Explorer Enhanced Security Configuration**. If you do, you need to add the website to the **Trusted site zone**.



2. Click **Interface Management** on the **CCG Service Tools** list.

3. On the **CCG Interface Management** page, click **Browse**, and navigate to the interface zip file (**<Analytics media>\ccg\Analytics\_prod.zip**).
4. Click **OK**, then click **Show Valid interface**.

**Result:** A list of valid interfaces is displayed in the **Available Interface(s)** list.

**Note** The **Available Interface(s)** list allows multiple interface selection. To select multiple interfaces, hold down the **Ctrl** key while making selections.

5. In the **CCG Interface Management** window, select interface(s) from the **Available Interface(s)** list, and click on **Activate Interface(s)** to deploy and activate the selected interface(s).

**Note** When an interface is deployed over an existing interface, a backup of the old interface will be created and can be found in **<CCG install location>\ccg\backup**. So, if you had installed CCG in **C:\gehc-it**, you must look in the **C:\gehc-it\ccg\backup** folder for the backup files. The **Deployment Status** box will provide the status of deployment and activation of interface(s) process.

## 7.5 Map HL7 to Analytics Parameters

Analytics collects information from CCG by reading HL7 (and, possibly, also reading MPPS).

Since different sites will use HL7 differently, the GE Integration team must use the Cloverleaf Integration Suite to map HL7 to Analytics parameters.

To map HL7 to Analytics parameters:

1. The GE Support Representative uses a spreadsheet showing HL7 to Analytics mappings as a guide when talking to the customer.

**Note** For a list of PACS events which can be passed to CCG for mapping to Analytics parameters, see .

2. With Cloverleaf, map the appropriate HL7 codes to the appropriate Analytics stored procedure parameters.

## 7.6 How to Give Users Access to Analytics

Users must be assigned to groups that give them access to some or all of the dashboards, reports, and scorecards they will need to use. See [How to Assign Users to Groups \(73\)](#) for instructions.

# Analytics Administration and Customization

This chapter shows you:

*This chapter includes:*

<i>How to Log in to the Settings Screen</i>	67
<i>How to Add, Edit, or Delete a Setting</i>	68
<i>How to Customize an Operational Metric (KPI)</i>	74

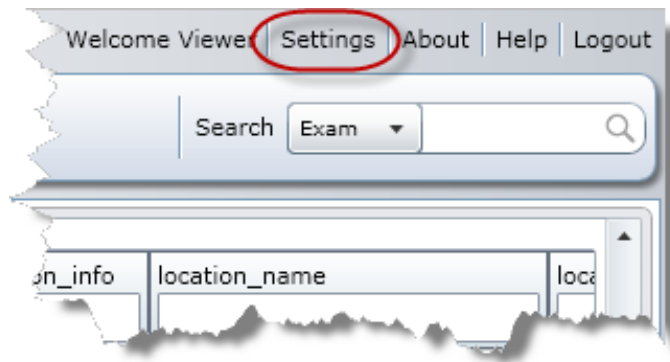
The **Settings** screen allows you to edit various administration and customization settings.

Settings are grouped into several categories.

Category	Description
<b>Op-Metrics Definition</b>	Allow you to customize existing KPIs ( <b>Dashboards</b> , <b>Reports</b> , or <b>Scorecards</b> ) or create new KPIs.
<b>Master File Data</b>	Allow you to add or update site-specific information like locations, modality codes, or procedure codes. To add a large number of MFD settings, use the Master File Data Loader spreadsheet. See <a href="#">Load Master File Data (64)</a> .
<b>Configuration Data</b>	Allow you to specify global information like defaults and labeling on KPI displays. <b>Note</b> This is also where you specify the number of database backups to keep.
<b>Workflow Data</b>	Allow you to specify lists of statuses, types, or states used by Analytics to monitor site workflow.

## 8.1 How to Log in to the Settings Screen

1. Log in to Analytics, then click **Settings**.



**Result:** This opens a login dialog.

2. Enter the user name and password for a SQL Server administrator account:

Default user: sa

Default password: V0yag3r

**Important** The default passwords are public information. The site must change all default passwords before taking the system live. (Log directly into the SQL Server database and change the SQL Server password for the system administrator.)

## 8.2 How to Add, Edit, or Delete a Setting

1. If you are not already on the **Settings** screen, log in to it (see [How to Log in to the Settings Screen \(67\)](#)).
2. In the **Settings** column on the left, select the type of setting you want to add, delete, or edit. The options are:

- **Op-Metrics Definition**
- **Master File Data**
- **Configuration Data**
- **Workflow Data**

See the beginning of [Analytics Administration and Customization \(67\)](#) for descriptions of these options.

3. In the **Data Tables** column, select the particular setting list you want to add to or edit.

Illustration 8.1 Settings screen with the Location in the Master File Data selected

**Settings**

Op-Metrics Definition  
Master File Data  
Configuration Data  
Workflow Data

**Data Tables**

Code Book  
Department  
Domain  
Domain Type  
Facility  
Equipment  
**Location**  
Modality  
Procedure  
Procedure Group  
Reason For Delay

**Location**

✓ Active ✓ ALL Refresh

creation_dttm	id	facility	last_update_dttm	location_code	location_fax_nbr	location_flag	location_info	location_nbr
1/30/2010	491	Summerville	1/12/2011	D.SEDOB		1		
1/6/2010	303	Summerville	1/12/2011	D.SED		1		SMC EMERG
1/6/2010	405	Trident	1/12/2011	D.TED		1		TMC EMERG
1/6/2010	437	Trident	1/12/2011	D.TOP		1		TMC OUTPA
1/6/2010	395	Trident	1/12/2011	D.TCOU		1		TMC CLOSE
1/6/2010	323	Summerville	1/12/2011	D.SOPLB		1		SMC OP (LA
1/6/2010	381	Trident	1/12/2011	D.T6FL		1		TMC 6TH FL
1/6/2010	471	Trident	1/12/2011	D.TINC		1		TRIDENT IN

Page 1 of 6

facility: Summerville

location\_name:

location\_code: D.SEDOB

location\_info:

location\_type:

location\_phone\_nbr:

location\_fax\_nbr:

4. Add a new setting record or delete or edit an existing setting record.

- To add a setting, click the add icon (+) located in the area of the screen (the detail area) underneath the listing of existing settings.

This adds an empty record to the list and opens the corresponding fields in the detail area.

- To edit a setting:

1. Select the row you want to edit.

**Note**

You may use the page controls

( Page 1 of 12 ) to scroll through the list, or click on a column heading to sort by that column, or type in a column heading to filter the list.

The check boxes ( ☒ Active ☒ ALL Refresh ), at the top of the setting list, allow you to show all settings or just those which are active. See [Settings Filters \(72\)](#). Deleting a setting makes it inactive.

The **Refresh** button re-reads the data from the database.

2. Click the edit icon ( ) at the top of the detail area (beneath the list of settings).

- To delete the selected record click the delete icon (-).

**Note**

Deleting a setting actually just makes it inactive. The database still retains the setting and any data collected with that setting. Inactive settings no longer accept new data.

5. If you are adding or editing a record, enter the new information in the detail area. When creating any new **Settings** record, you *must* enter information in all fields with **bold** headings.

**Note**

Some data can be **UNSPECIFIED**. UNSPECIFIED and UNKNOWN are used interchangeably throughout the Analytics user interface.

**Result:** As you enter data in the detail area, the new information also appears in the record in the list above.

6. Click **Save**.

**Note** You must either click **Save** or **Cancel** before the **Settings** screen will allow you to select anything else.


**Result:** This updates Analytics with your edits.  
**Note** To see your edits in the **Dashboard**, **Report**, or **Scorecard** pages, you must log out and log back into Analytics.

## 8.2.1 Using Exam Modifiers


Exam modifiers let you further define site-specific information presented in dashboards, reports, and scorecards. For example, exam modifiers can be configured to alert radiologists that an exam needs to be read. Or, they can be used to exclude research exams from being read.

Exam modifiers are stored at the exam level and require code book entries. **kpi\_countable** must be checked to be included in the count.

### 8.2.1.1 Enabling, Disabling, and Changing the Display Name

1. In the **Settings** column on the left, select **Configuration Data**.
2. In the **Data Tables** column, select **Configuration**.
3. Select the appropriate exam modifier.
4. To configure the value, click the edit icon  at the top of the detail area (beneath the list of settings).
5. The text entered in the **config\_value** column determines the radio button name that will display under **Filter By**.

### 8.2.1.2 Set the Value of the Modifier

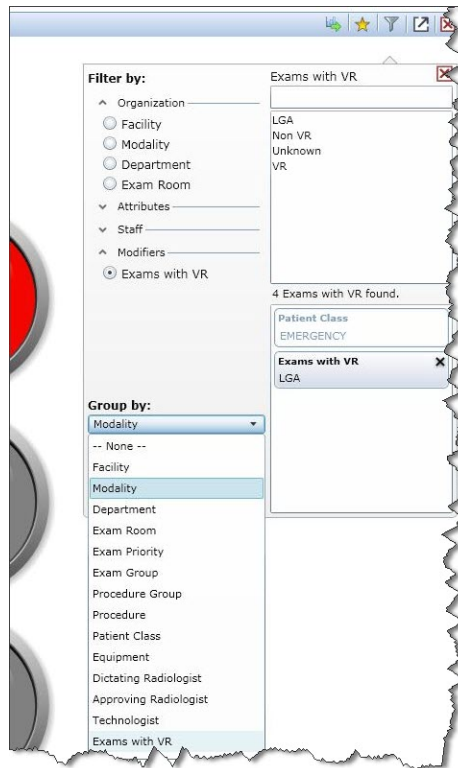
1. In the **Settings** column on the left, select **Master File Data**.
2. In the **Data Tables** column, select **Code Book**.
3. Select the row where you want to add a value for the exam modifier.
4. Click the edit icon  at the top of the detail area (beneath the list of settings).
5. The text entered in the **internal\_code** column determines the values that will display under **Group By**.

**Configuration**

config_desc	config_flag	config_group	config_name	config_value	creation_datetime	last_update_datetime
EXAM MODIFIER 1	1	EXAM MODIFIERS AND SPARE ATTRIBUTES	EXAM MODIFIER 1	Exams with VR	6/22/2011	6/22/2011
EXAM MODIFIER 4	1	EXAM MODIFIERS AND SPARE ATTRIBUTES	EXAM MODIFIER 4		6/22/2011	6/22/2011
EXAM MODIFIER 3	1	EXAM MODIFIERS AND SPARE ATTRIBUTES	EXAM MODIFIER 3		6/22/2011	6/22/2011
EXAM MODIFIER 2	1	EXAM MODIFIERS AND SPARE ATTRIBUTES	EXAM MODIFIER 2		6/22/2011	6/22/2011

**Code Book**

attribute_name	rank	code_flag	creation_datetime	external_code	internal_code	last_update_datetime
EXAM MODIFIER 1	0	3	7/12/2011	USA	USA	7/12/2011
EXAM MODIFIER 1	0	3	6/22/2011	Unknown	Unknown	7/12/2011
EXAM MODIFIER 1	0	3	7/12/2011	Non VR	Non VR	7/12/2011
EXAM MODIFIER 1	0	3	7/12/2011	VR	VR	7/12/2011



## 8.2.2 Configuring Remote Alerts

To enable/disable and set the time interval for alert notifications, do the following:

**Note** Users can further define their alerts when they set a bookmark by clicking **Add Notification**.

1. On the **Settings** screen, go to **Configuration Data > Data Tables > Configuration**,
2. To enable/disable notifications, scroll to **Boolean Flag To Turn On/Off Notifications**. To enable, set **config\_value** to **1**. To disable, set **config\_value** to **0**.
3. To specify the alert notification interval, scroll to **Notification Check Interval in Minutes (Minimum 3)**. To change the interval, set **config\_value** to the desired minutes.

## 8.2.3 Settings Filters

The check boxes (☒ Active ☒ ALL [Refresh](#)), at the top of the setting list, allow you to show all settings (active and inactive), or only show active settings.

To make a setting inactive, select it and click delete (-).



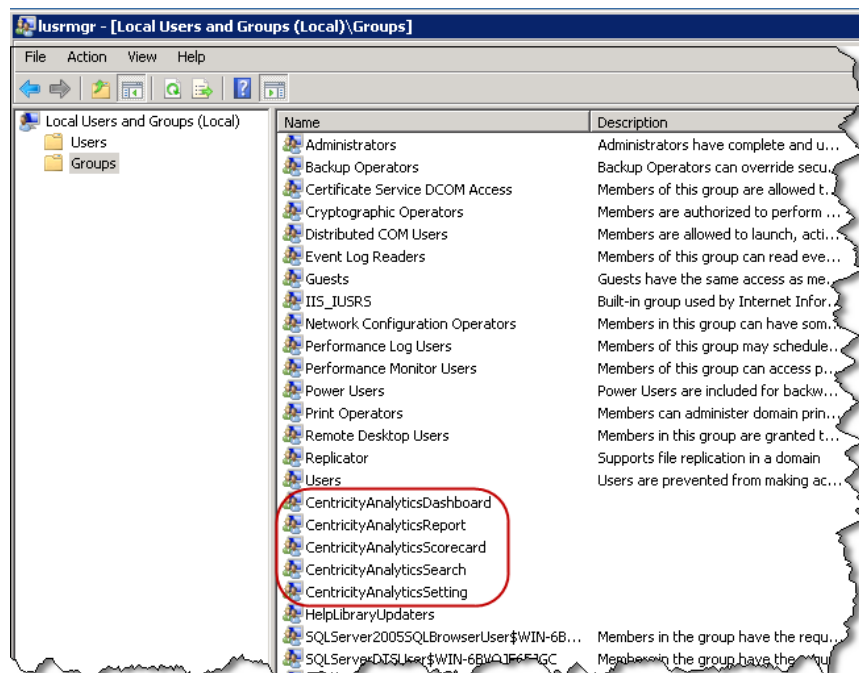
Check box	Purpose
<b>Active</b>	Excludes inactive settings from the list. Some Master File Data settings and KPI calculation settings are for testing, training, or administrative workflow, but are not intended for general use on a production system. These settings are marked as inactive. Inactive settings do not display on Dashboards, Reports, or Scorecards. Inactive settings also do not accept new data.
<b>All</b>	Shows all settings in the list regardless of whether they are active or inactive.

## 8.3 How to Assign Users to Groups

Installer will create five default Windows groups to which appropriate users may be assigned. They are:

- CentricityAnalyticsDashboard – adding a user or group of users allows **dashboards** to be viewed.
- CentricityAnalyticsReport – adding a user or group of users allows **reports** to be viewed.
- CentricityAnalyticsScorecard – adding a user or group of users allows **scorecards** to be viewed.
- CentricityAnalyticsSearch – adding a user or group of users allows access to **all of the events recorded in the system for an exam, patient, or staff**.
- CentricityAnalyticsSettings – adding a user or group of users allows access to **master file, configuration, and workflow** data.

"Administrators" and the "geservices" account will have access to all features. To access the [Groups](#) file where you will assign users to groups, go to **Local Users and Groups**.



For additional details about adding users, or users to groups, refer to the Microsoft Windows online help.

## 8.4 How to View Analytics Events in the Event Log

Analytics logs events and errors to the standard Windows Event Log.

To view Analytics events:


1. From Windows, select **Start > Administrative Tools > Event Viewer**.


*Result:* This opens the **Event Viewer** window.

2. Select **Event ViewerWindows LogsApplication** in the column on the left.

*Result:* This shows all logged events from all applications. Analytics events list **Application** as the **Source**.

**Note** Other applications on the system may list **Application** as the **Source** for their events.

3. Click the **Source** column header to sort the events by **Source**. Most items should be  **Information** events.

A few items may be  **Error** events.

4. Select an Application event.

*Result:* This shows a description of the event and other general information. From the description, you should be able to tell whether Analytics or another application generated the event.

5. Click the **Details** tab to see the even details.

## 8.5 How to Customize an Operational Metric (KPI)


Typically, when you want a custom KPI you want one that's similar to an existing KPI.

**Note** There are two links at the lower left corner of the **Settings** screen (**Dundas Dashboards** and **KPI Parameter Mgmt**). These two links take you to tools which are beyond the scope of this document. There are many undocumented interactions between the settings you can modify with those tools. Modifying parameters with these tools can have unintended consequences which are difficult to troubleshoot. If you do not know the internal details of the Analytics, do not use these tools.

1. If you are not already on the **Settings** screen, log in to it (see [How to Log in to the Settings Screen \(67\)](#)).
2. Select **Op-Metrics Definition** under the **Settings** column on the left.
3. From the list of **Data Tables**, choose whether you want a **Dashboard**, **Report**, or **Scorecard** KPI.
4. Select the existing KPI which measures the metric most similar to what you want.

5. Click Clone.

**Result:** This creates a KPI identical to the one you had selected, except “\* ” is added as a prefix to the **kpi\_code**.

6. Select the new clone KPI and click the edit icon (  ).

**Note** To create a KPI from scratch, click add (+) rather than edit.

7. Change the **kpi\_code** to better reflect the new metric. You may also add a description (**kpi\_desc**).


**Note** If you do not change the name of a KPI clone, the next time you clone the same KPI, you will have two KPIs with the same **kpi\_code**. This will cause confusion and may cause unpredictable behavior.

8. Click **Set Parameters**.Parameter define what a KPI measures. The parameters are divided into general categories.

**Note** You should not alter **Advanced Parameters** unless you are thoroughly familiar with the internals of the Real-time Dashboards. Altering any Advanced Parameter could have unintended consequences that may be difficult to debug.


When you hover your cursor over a parameter a tool tip shows its definition and valid values.

9. Select a parameter you want to modify.

10. Click edit (  ).

11. Edit the **kpi\_parameter\_value.kpi\_parameter\_name** and **kpi\_parameter\_type** are read only.

12. Click **Save**.The **Parameter Editor** will not let you select a different parameter until you either click **Save** or **Cancel**.

13. Once you have edited all the parameters you want to change, click the close icon (  ) in the upper right corner of the **Parameter Editor** window.

**Note** Do not overlap time limit categories when creating KPIs. KPIs with overlapping categories will give incorrect results. For example, if one category is 0–30 minutes and another is 15–45 minutes, the same exams will be eligible for display in both categories. This will give incorrect totals.

**Next:** Log out of Analytics and log back in, then look at your newly created Dashboard, Report, or Scorecard. If the data shown is not what you expect, then log back into the Settings window and see if you missed a setting or specified a setting incorrectly.



## PACS Events

The PACS ENM events to which CCG should subscribe depend upon the needs and workflow of the site. The table below shows events which Analytics can accept. If you want an Analytics KPI to use any of these events, CCG must subscribe to the events. You then map the corresponding HL7 to the proper parameters.

Table A.1. ENM events to which CCG can subscribe

Event	ID	Analytics Stored Procedure	Description and PACS Trigger
ExamStatusChange	1	EXAM_SET	Exam status has changed. This event encompasses: exam scheduled, exam canceled, patient arrived, exam verified, dictated, report transcribed, and exam completed. The value it has changed to is found in the state value attribute.
AcquisitionChange	2	SERIES_SET	Acquisition state has changed. This event encompasses Acquisition begun and Acquisition Complete. The value it has changed to is found in the state value attribute.
ExamLTChange	3	EXAM_SET	Lta_stat changed such as exam added to long-term storage or images abandoned from long-term storage.
OrderUpdated	4	SERIES_SET	Any update to the exam other than exam_stat, acq_stat, fce, report_text, or study_instance_uid, img_cnt, total frame cnt, rejected frame cnt, last viewed dtm, rejected img cnt
ExamMerged	5	EXAM_SET	Exam merged or Study_instance_uid changed
PatientMerged	6	PATIENT_SET_BY_ID	Patient records merged
StudyAddedSTS	7	SERIES_SET	
StudyRemovedSTS	8	SERIES_SET	
PatientUpdated	9	PATIENT_SET_BY_ID	Patient demographic updated. Caused by any update to patient record other than patient merge.
ExamViewed	14	EXAM_SET	Exam displayed on a workstation.
ExamPrinted	15	EXAM_SET	Exam submitted to the print queue.

Event	ID	Analytics Stored Procedure	Description and PACS Trigger
ExamNotesDeleted	16	EXAM_SET	This event is generated when an exam note is deleted for an exam using RA1000. Information related to the user, exam, and similar parameters are logged. For the event to execute, it has to be in the subscriber event_subscription table (use get_subscriber_info). That subscriber must also be active (to verify, check the active flag of the subscriber table).
PatConfidentialChg	18	PATIENT_SET_BY_ID	Confidential patient setting changed.
ExamSent	19	SERIES_SET	
RetrieveExam	21	SERIES_SET	
StudyLTACChange	22	SERIES_SET	
StudyAcqChange	23	SERIES_SET	
ImageUpdated	27	EXAM_SET	
ImageExported	28	EXAM_SET	
WorkitemClaimed	29	EXAM_SET	
WorkitemStatusChanged	30	EXAM_SET	
ReportViewed	37	EXAM_SET	
ExamAddedSTS	38	EXAM_SET	Exam added to short-term storage (from either archive, acquisition or C2C transfer). Triggered when fetched from archive, acquired from a modality, or transferred from another site (C2C transfer).
ExamRemovedSTS	39	EXAM_SET	Exam removed from short-term storage (CAM). This removal occurs when exam is purged from (any) cache.
ExamSaved	48	EXAM_SET	
ReportSaved	49	EXAM_SET	
ExamNotesCreated	50	EXAM_SET	
SeriesInfo	54	SERIES_SET	

# Cloverleaf License Request Process

*This chapter includes:*

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<i>License Key Installation</i>	80
<i>Sample Product Deployment Configurations</i>	85

## B.1 Definitions

- **External Thread**—An external thread is an internal designation assigned to threads that are configured in the Cloverleaf Integration Service NetConfig tool. In the NetConfig tool, a user can add, edit or delete threads. These threads represent the connectivity choices for a system to communicate to the Cloverleaf Platform. In an OEM capacity, when you add a thread to the NetConfig, you must designate it as either a Vendor or an External Thread. Configure the external thread to communicate to a third-party system. Do not use it to communicate to a GE Healthcare system.
- **Vendor Thread**—A vendor thread is an internal designation assigned to threads that are configured in the Cloverleaf Integration Service NetConfig tool. In the NetConfig tool, a user can add, edit or delete threads. These threads represent the connectivity choices for a system to communicate to the Cloverleaf Platform. In an OEM capacity, when you add a thread to the NetConfig, you must designate it as either a Vendor or an External Thread. Vendor thread is to communicate to a GE Healthcare system. Do not use it to communicate to a third-party system.
- **Connection**—A connection is defined as a Cloverleaf Integration Service Thread configured to communicate to a single system over a supported protocol. An example of a connection is a TCP/IP configured external thread that is set to client mode, attempting to reach a third-party system at IP address 192.168.0.24 on port 9001.

**Note**      **Each thread (external or vendor) is associated with an IP address and a port number**

- **Third-party System**—An application or software program not produced by GE Healthcare. Typically, this would be an application owned by the customer of GE Healthcare that the customer purchased from another vendor. An example of this

would be a laboratory information system purchased from SunQuest by the GE Healthcare customer

## B.2 Identify Customer Configuration

Based on customer site surveys, as defined by P&L/Product service teams, identify the following:

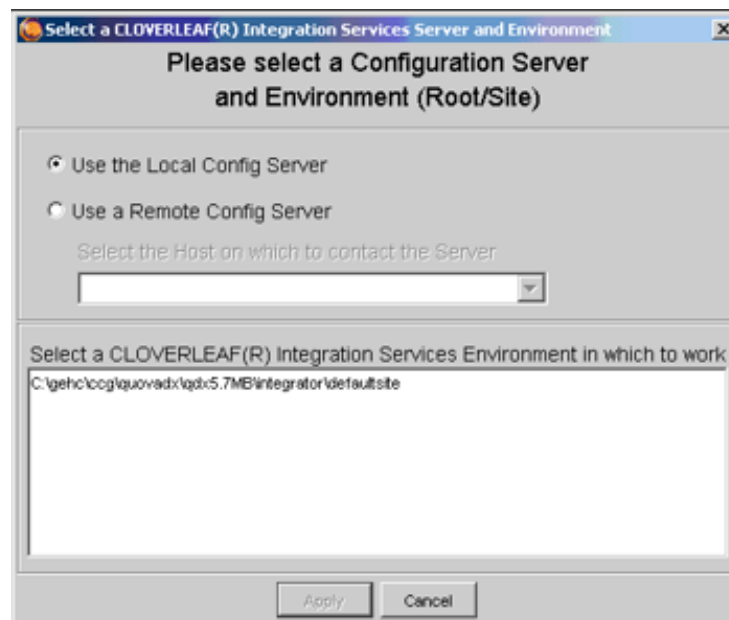
- Total number of **external production threads** required.
- [Sample Product Deployment Configurations \(85\)](#)
- Total number of additional production sites needed. By default, the following production sites are required to be used by pre-defined adapters. These are used only if interfaces are activated (based on integration needs).
- [his\\_prod](#), [ccg\\_prod](#), [ihe\\_prod](#), [ihe\\_prod\\_oru](#)
- Total number of test sites needed.
- Total number of external test threads required.
- Host ID of the system.

### B.2.1 Host ID of the System

1. To obtain the host ID, open the Cloverleaf IDE. On the Windows **Start** menu, click **All Programs > QDX Platform 5.3 > QDX Integration Services > IDE**.

*Result:* The **Please select a Configuration Server and Environment (Root/Site)** dialog box opens.

2. Click **Use the Local Config Server**.
3. Select **defaultsite** that display in **Select a CLOVERLEAF(R) Integration Services Environment in which to work** box.

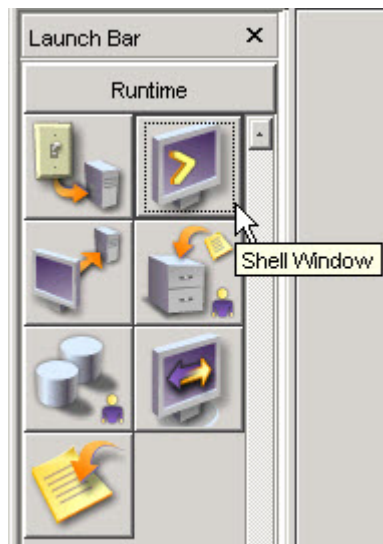


4. Click **Apply**.

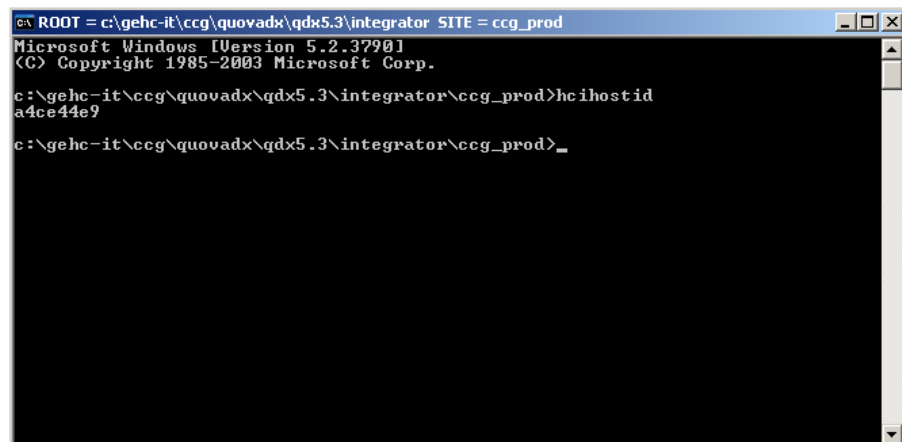
**Result:** The Cloverleaf Integrator window displays.

- Click the **Runtime** tab, then click the **Shell Window** icon.

If the system has multiple Network Interface Cards (NICs), verify that the right card is enabled and connected to the network before entering this command.



- In the shell window, type **hcihostid** then press **Enter**.



If the system has multiple Network Interface Cards, you must obtain hostids and licenses for each and send them as part of the Cloverleaf License request form. To get a hostid for a given network card, disable all other network cards and follow steps a through d above. Repeat for each card.

## B.3 License Key Installation

To download license data for Cloverleaf, complete the following steps:

- Any person performing License key requests needs access to the OAC Web site access, click the **Request OAC Access** link on the Support Central site link below:

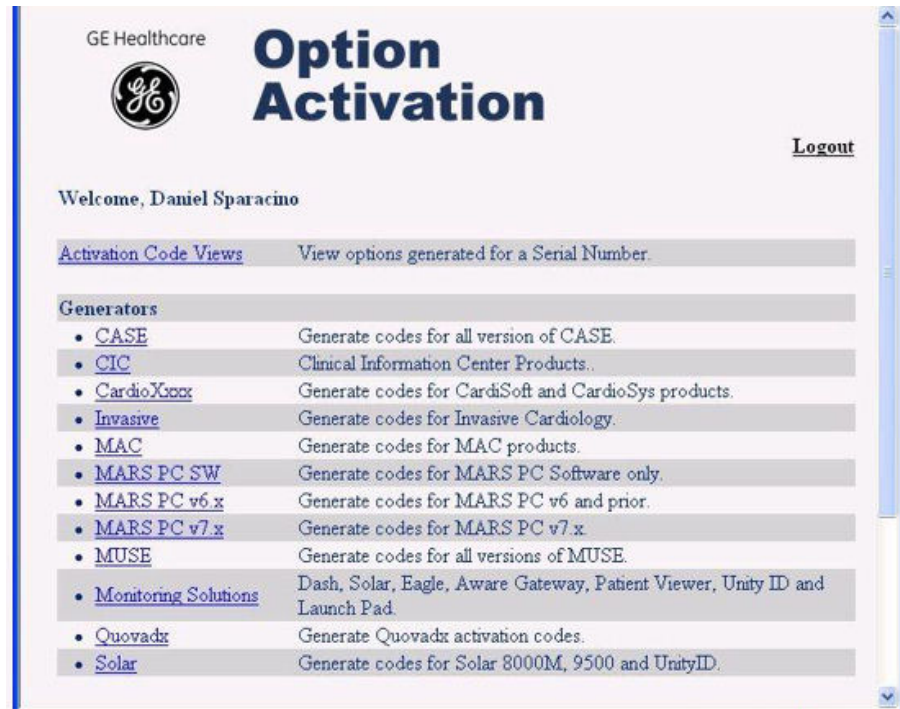
[http://supportcentral.ge.com/products/sup\\_products.asp?prod\\_id=21919](http://supportcentral.ge.com/products/sup_products.asp?prod_id=21919)

This is required to get access to the license request site (step 2).

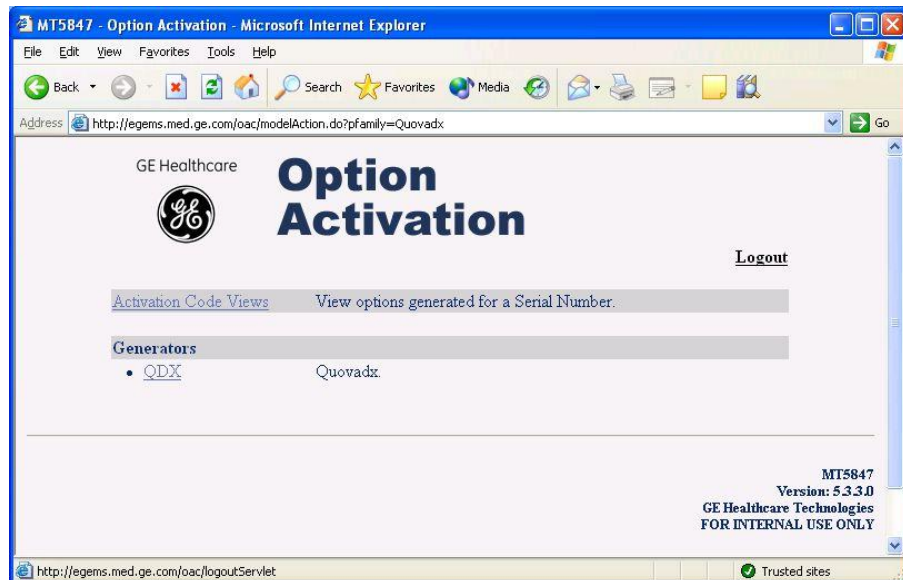


2. Log on to the Web page:  
**<http://oac.health.ge.com>**

The **Option Activation** window is displayed.



3. Click the **Cloverleaf** link.  
The following window is displayed.



4. Click the **QDX** link.
5. Enter the customer information in **Customer Profile**.

**Option Activation** [Logout](#)

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**Customer Profile and Configuration Information Registry**

---

Customer Number :

Customer Name :

Customer Address :

Version : Choose from the following -

Order Number :

Additional Site IDs (comma seperated) :

---

MT5847  
Version: 5.0.0.0

- a. Type the customer number in **Customer Number** text box, then click **Fetch**.
- b. Click **Select** in the pop-up window that is displayed.

The **Customer Name** and **Customer Address** text boxes are populated with the selected data.

- c. Select the Cloverleaf Version in the **Version** list.
  - d. Type the order number in the **Order Number** text box.
  - e. Type the non standard site IDs in the **Additional Site IDs** text box.
  - f. Click **Submit**.
6. In the **Cloverleaf Option Activation Code Generator**, enter the host ID in the **Host ID** text box.

## QDX Option Activation Code Generator

[Logout](#)

**Host ID :**

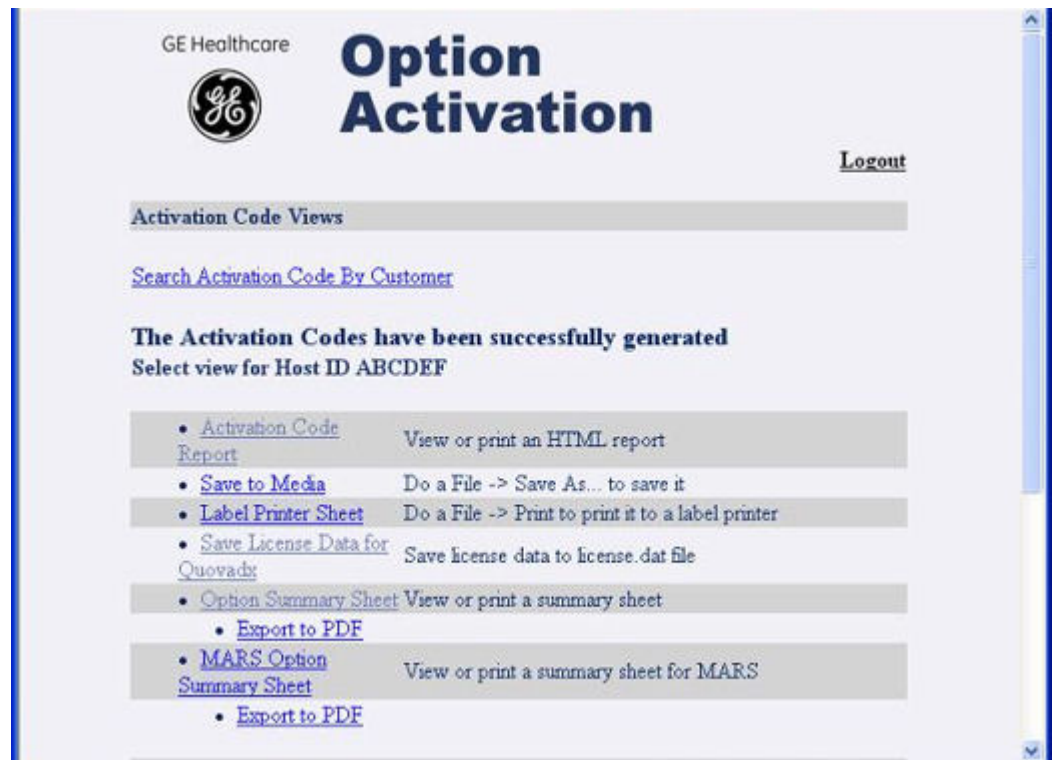
Option Code	Option Name	Item Number
QDX1	ExternalTestingThreads	<input style="width: 100px;" type="text" value="4"/> 2020107-001 (min/max) - (1/64)
QDX2	ExternalProductionThreads	<input style="width: 100px;" type="text" value="8"/> 2020114-001 (min/max) - (1/64)

MT5847  
 Version: 5.0.0.0  
 GE Healthcare Technologies

To select the options the customer ordered, type the correct item number in the **Item Number** text box.

Click **Generate Activator Codes**.

7. Click **Save License Data for Cloverleaf**.



The **File download** window displays.

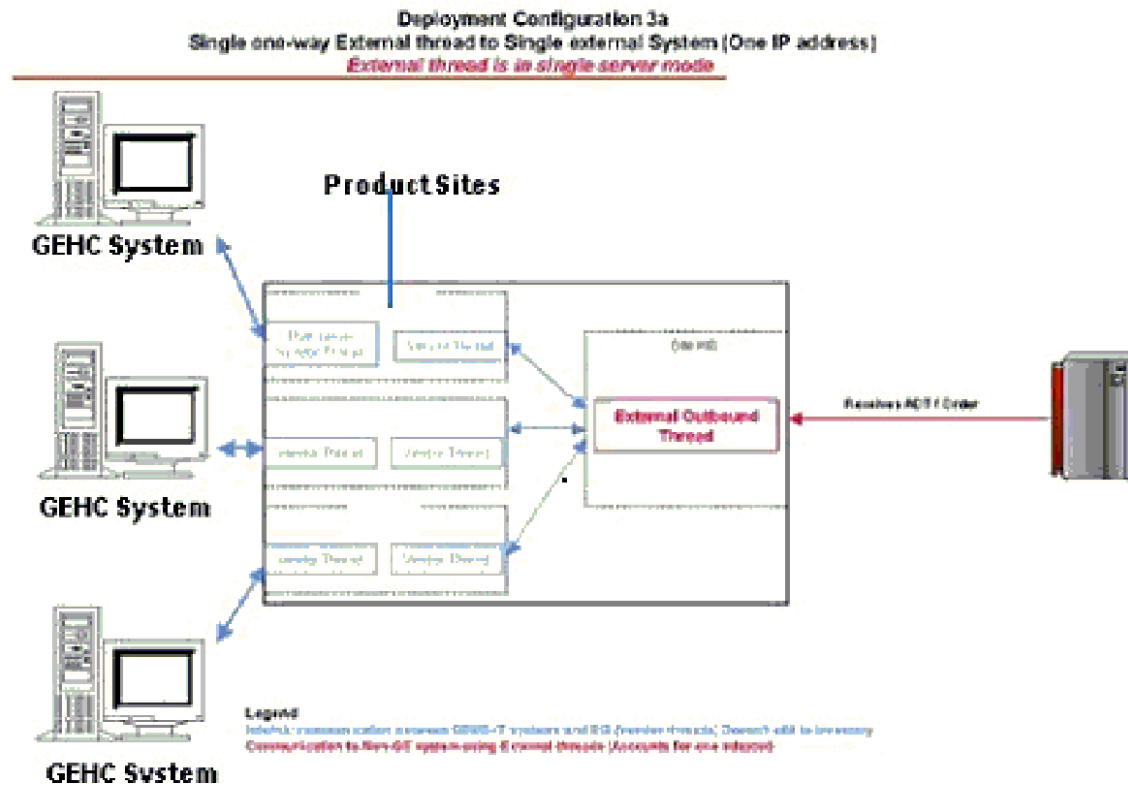


8. Click **Save** to save the license data to the **license.dat** file in <CCG install location>\ccg\quovadx\qdx5.7MB\integrator\vers.

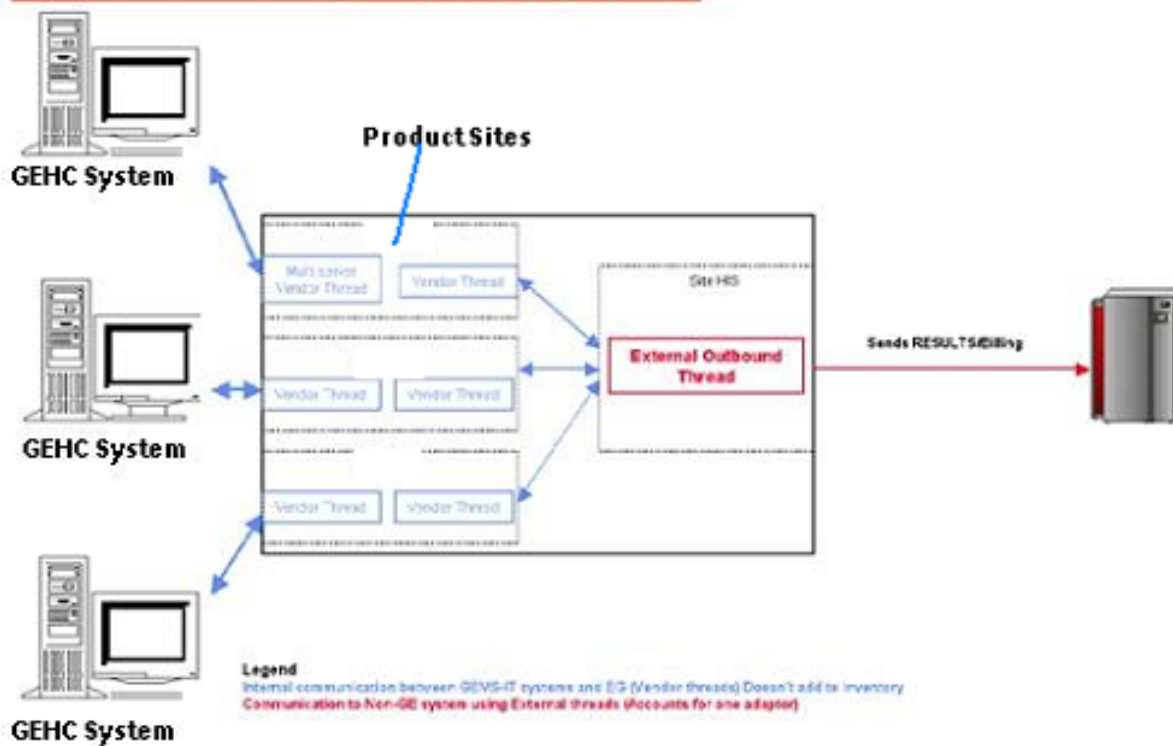
To install the license file on another CCG system, save the **license.dat** file to the hard drive or to a memory stick, and then transfer to the system being licensed.

## B.4 Sample Product Deployment Configurations

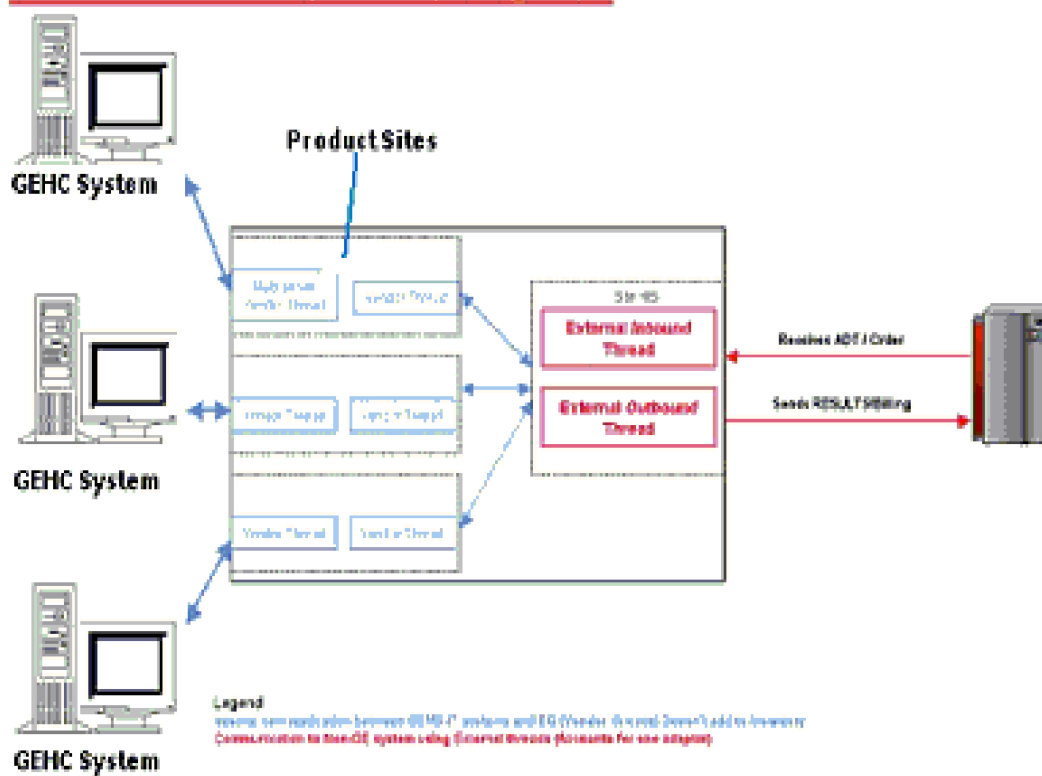
The following product deployment configurations are possible.

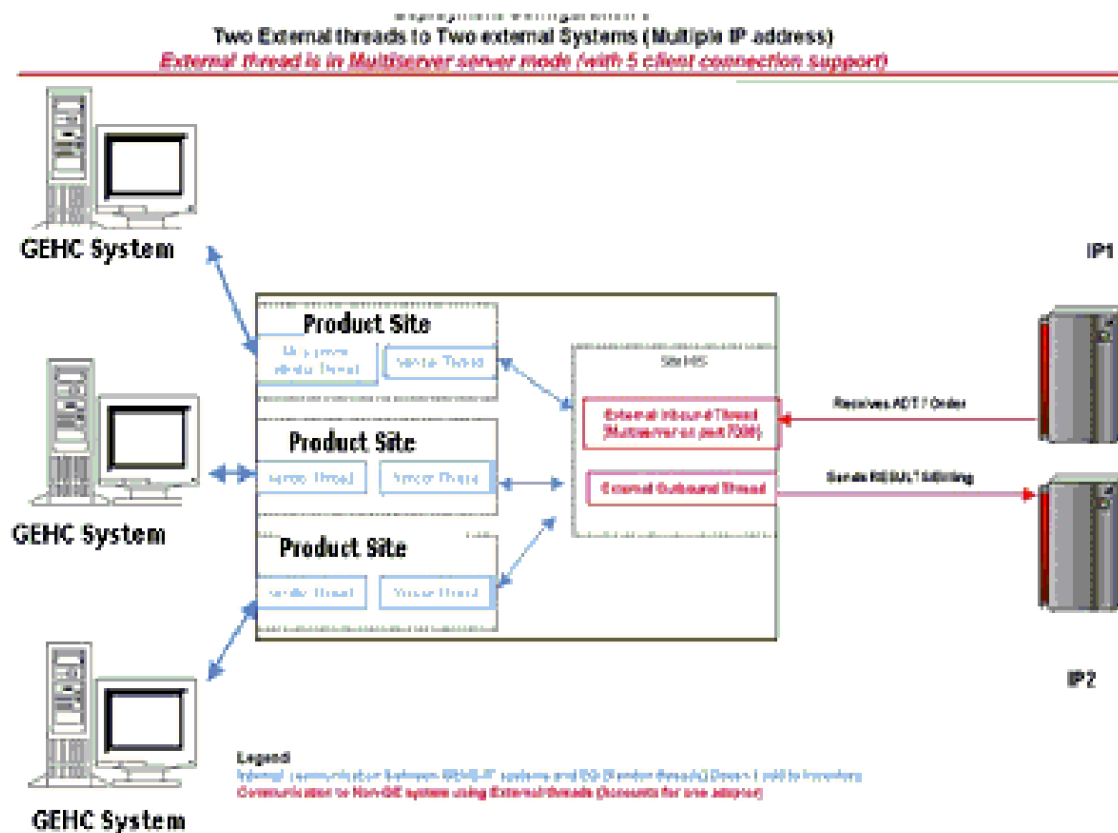
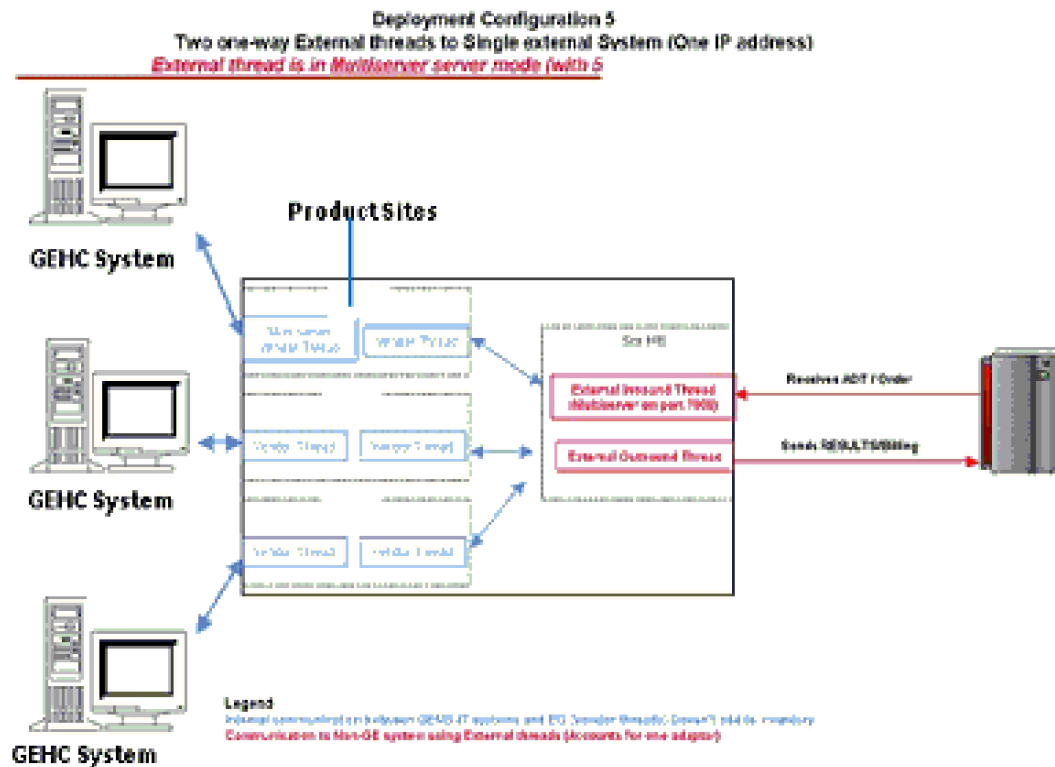


**Deployment Configuration 3b**  
Single one-way External thread to Single external System (One IP address)  
*External thread is in single server mode*



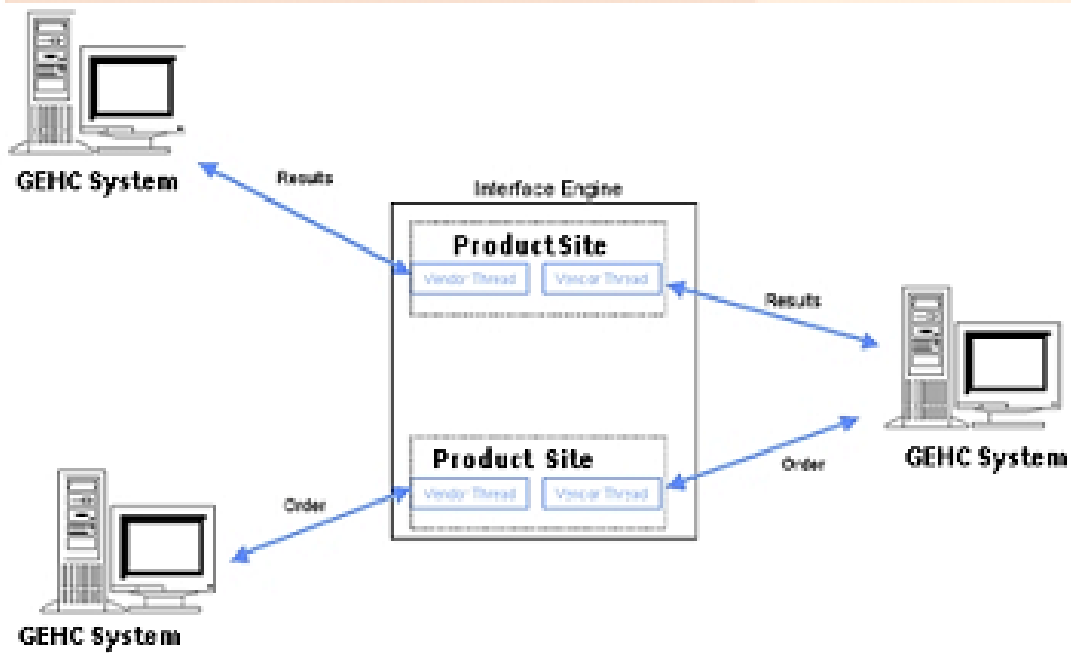
**Deployment Configuration 4**  
Two one-way External threads to Single external System (One IP address)  
*External thread is in single server mode*





One (or more) GEMS-IT product(s) interfacing to another GEHC product  
**NO EXTERNAL PRODUCTS INVOLVED**

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# Glossary

<b>ADT</b>	<b><i>Admit Discharge Transfer</i></b>
<b>Analytics</b>	<b><i>Centricity Imaging Analytics Real-time Dashboard</i></b>
<b>CCG</b>	<b><i>Centricity Clinical Gateway</i></b>
<b>CCS</b>	<b><i>Clinical Configuration Specialist</i></b> For Analytics, the CCS works with the customer to create custom KPIs (Dashboards, Reports, or Scorecards).
<b>Dashboard</b>	A graphically presented summary KPI (metric). Dashboards are shown as traffic lights, simple bar charts, stacked bar charts, or gauges. You can also view Dashboard KPIs in a tabular format called the Data Grid.
<b>HIS</b>	<b><i>Hospital Information System</i></b>
<b>HL7</b>	<b><i>Health Level 7</i></b> Used by CCG to communicate with Analytics and other systems.
<b>KPI</b>	<b><i>Key Performance Indicator</i></b> The metric (statistic or measurement) shown in a Report, Dashboard, or Scorecard.
<b>MPPS</b>	<b><i>Modality Perform Procedure Step</i></b> This format contains data about what really has been performed by modality equipment during acquisition. You can configure CCG to accept this data and send it to Analytics.
<b>ORM</b>	<b><i>Order Message</i></b>
<b>ORU</b>	<b><i>Observation Result</i></b>
<b>PACS</b>	<b><i>Picture Archive Communication System</i></b>
<b>PGP</b>	<b><i>Presentation of Grouped Procedures</i></b>
<b>PM</b>	<b><i>Project Manager</i></b>
<b>RDP</b>	<b><i>Remote Display Protocol</i></b>
<b>Report</b>	A chart which allows the site to perform an operational analysis that identifies areas which require improvement. Reports display as a simple bar chart, a stacked bar chart, or a stock chart.
<b>RIS</b>	<b><i>Radiology Information System</i></b>
<b>Scorecard</b>	A table which shows how well each department did with respect to a particular metric.
<b>SIS</b>	<b><i>System Integration Specialist</i></b> For Analytics, the SIS performs the HL7 to Analytics mapping and is involved in loading Master File Data into the product database.
<b>ZSE</b>	<b><i>Zone Support Engineer</i></b>

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imagination at work